# WHEN AND WHERE DO BIASES EMERGE? MEMORY AND DECISION MAKING ACROSS LEGAL CONTEXTS

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

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August 2018

# WHEN AND WHERE DO BIASES EMERGE? MEMORY AND DECISION MAKING ACROSS LEGAL CONTEXTS

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Cornell University 2018

Children and adults may come in contact with the criminal justice system in a myriad of ways. Individuals may witness crimes and be called as witnesses; police officers often need to make assessments about whether they or those around them are in danger; and community members may serve as jurors in civil or criminal cases. In each of these contexts, biases in memory and decision making may lead to extreme consequences for the suspects and defendants involved. In this thesis, I present three studies exploring memory and decision making in diverse contexts. In my first paper, I demonstrate that children's minimal group membership impacts their memories of actions committed by in- and out-group members across time. In the second paper, I explore two novel interventions aimed at reducing shooting decision inaccuracy in mock police officers. Last, I investigate mock juror decision making as a function of verdict procedure and find that jurors' decisions are remarkably similar when jurors render a general verdict, or when asked to provide reasons for their decisions before or after rendering a general verdict; however, jurors' decisions are dissimilar when rendering a special verdict. Implications for the criminal justice system are discussed.

## BIOGRAPHICAL SKETCH

Kayla Ann Burd earned her bachelor's degree in Psychology in 2010 from Hofstra University. After completing her undergraduate studies, she attended Arizona State University and earned her master's degree in Psychology in 2013. She entered the Department of Human Development at Cornell University in 2013 and earned her master's degree in Developmental Psychology in 2016. During her time at Cornell, Kayla concentrated in Law, Psychology, and Human Development and worked with Dr. Stephen Ceci in the Child Witness and Cognition Lab, with Dr. Anthony Burrow in the Purpose and Identity Processes Lab, and with Dr. Valerie Hans at Cornell Law School.

Kayla's research explores how individuals and groups make decisions in legal context. She has explored decision making and the impact of extra-legal biases in mock jurors, mock juries, and mock police officers. She is interested in exploring interventions aimed at reducing implicit biases with the justice system and the application of psychological theory within the justice system to inform policy change. After completing her doctorate, Kayla will start a position as a post-doctoral research fellow at Iowa State University with Drs. Madon and Guyll.

For Juniper Fern

# ACKNOWLEDGMENTS

This work was funded by a dissertation grant from the Department of Human Development at Cornell University and by a contribution from Dr. Valerie Hans.

I would like to thank my committee members, Drs. Stephen Ceci, Anthony Burrow, and Valerie Hans. Thank you for all of your guidance and support through the years. I cannot thank you enough for your encouragement, and for creating research spaces where exciting ideas form. Thank you for making Juniper feel at home, and for having her on as an honorary lab member. She will not remember how many lab meetings she attended, or how she took her first steps in lab, but I will – and I am forever grateful.

Thank you to all of my wonderful friends and lab mates: Amanda, Amelia, Becca, Blayne, Caisa, James, Julia, Kate, Kaylin, Krystia, Michael, Rochelle, and Vivian. I am so fortunate to have met and worked alongside such excellent individuals. Your support, moral and instrumental, truly helped me get to this point. Thank you for always being there – I will never forget the wonderful times we have shared here in Ithaca.

Thank you to all of the fantastic undergraduate research assistants who helped with my doctoral research: Abigail, Angie, Anna, Camille, Emma, Erica, Gracie, Ignatius, Liel, Lona, Matt, Paola, Snaeha, Suzy, and Xing. You are impressive students, researchers, and individuals. Thank you for all of your hard work – I am forever grateful. I would also like to thank the schools and families who made this work possible, along with the many individuals who volunteered to participate in my research.

Larry – thank you for everything. You are the best friend, husband, and father anyone could ever ask for. You are kind and supportive, and you always know when to bring home a milkshake. Thank you for listening to a thousand variations of every study, paper, and presentation. Thank you for providing so many adventures, and for reminding me of our wonderful life outside of all of this hard work.

Finally, thank you to all of my amazing family. Without you, none of this would be possible. Thank you for your love and support through all of these years (your kind words, silly jokes, for reviewing drafts) and for believing in me when I sometimes didn't believe in myself. Thank you for being such excellent role models. Your love means more to me than you will ever know.

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# CHAPTER 1

# INTRODUCTION

On any given day in the United States, children might be witnesses to minor and major crimes, police officers may need to make split-second decisions during ambiguous situations as to whether a suspect is armed or unarmed, and civil and criminal juries are tasked with making sometimes-arduous decisions. Importantly, within each of these highly varied contexts, there is naturally room for error and biases in human cognition: children's memories can be tainted and changed (Bruck, Ceci, & Hembrooke, 2002; Bruck & Ceci, 2004; Talwar, Hubbard, Saykaly, Lee, Lindsay, & Bala, 2018); shooting decisions can be impacted by racial biases (Correll, Hudson, Guillermo, & Ma, 2014; Ross, 2015) and made difficult because of ambiguity (Correll et al., 2014); and groups of individuals must grapple with their own and others' perceptions of and opinions regarding complex evidence (Salerno, Bottoms, & Peter-Hagene, 2017) with the aim of coming to a unanimous group decision (Kaplan & Miller, 1987). In this thesis, I present studies examining human cognition and decision making across three legally relevant contexts: children's memories of actions perpetrated by in- and out-group members; mock police officer shooting decisions for armed and unarmed European and African American suspects; and mock juror decision making in a civil context.

In my first paper, "The effects of "minimal" group membership in children across time," I explore the impact of minimal group membership on children's memories for actions committed by in- and out-group members across time. I provide

initial evidence to suggest that children's memories of events are in fact biased in favor of their in-group over an extended period. Further, children's memories of out-group members become less favorable across time, as evidenced by their poorer memory of positive out-group actions across time. However, children did not exhibit biases in terms of their free-recall or recognition of negative actions committed by in- or out-group members during initial or follow-up experimental sessions or when comparing such memories across time.

In my second paper, "Pulling away from the trigger: The influence of purpose in life and self-affirmation on shooting decisions," I explore whether purpose in life and/or self-affirmation writing interventions can improve decision accuracy and reduce reaction time for shooting decisions in a first-person shooter video game. I demonstrate that purpose in life writing interventions may help reduce shooting decision reaction time. Further, I provide evidence to suggest that purpose interventions may promote equality in shooting decisions for armed and unarmed suspects, and possible mechanisms for these findings are discussed.

In my final paper, "Diverging Decisions: A Comparison of Jury Verdict Procedures," I present a study exploring the impact of verdict procedures and racial bias on mock juror decision making in a civil case regarding defamation. Here, I compare mock juror decisions decided utilizing a general verdict, a special verdict, or two variations of a general verdict procedure that require mock jurors provide reasons for their decisions. I demonstrate that mock jurors are least likely to find for the plaintiff when asked to render a special verdict, while no differences in decision

making were found for mock jurors who rendered a general verdict or a general verdict with a reasoning requirement.

Based on evidence from this research, I conclude with a discussion of the important legal implications related to these differences in human cognition across these three varied contexts: eyewitness memory, evidence, and testimony; police officer decision making during ambiguous contexts; and lastly, the differential impact of verdict procedures on jurors' decision making. I end with a call for future research in these areas, and suggestions to improve decision accuracy in these contexts and how we perceive children's eyewitness memory in these contexts.

REFERENCES

Bruck, M., Ceci, S. J., & Hembrooke, H. (2002). The nature of children's true and false narratives. *Developmental Review*, *22*(3), 520-554.

Bruck, M., & Ceci, S. (2004). Forensic developmental psychology: Unveiling four common misconceptions. *Current Directions in Psychological Science*, *13*(6), 229-232.

Correll, J., Hudson, S. M., Guillermo, S., & Ma, D. S. (2014). The police officer's dilemma: A decade of research on racial bias in the decision to shoot. *Social and Personality Psychology Compass*, *8*(5), 201-213.

Kaplan, M. F., & Miller, C. E. (1987). Group decision making and normative versus informational influence: Effects of type of issue and assigned decision rule. *Journal of Personality and Social Psychology*, *53*(2), 306.

Ross, C. T. (2015). A multi-level Bayesian analysis of racial bias in police shootings at the county-level in the United States, 2011–2014. *PLoS One*, *10*(11), e0141854.

Salerno, J. M., Bottoms, B. L., & Peter-Hagene, L. C. (2017). Individual versus group decision making: Jurors' reliance on central and peripheral information to evaluate expert testimony. *PloS One*, *12*(9), e0183580.

Talwar, V., Hubbard, K., Saykaly, C., Lee, K., Lindsay, R. C. L., & Bala, N. (2018). Does parental coaching affect children's false reports? Comparing verbal markers of deception. *Behavioral Sciences & the Law*, *36*(1), 84-97.

# CHAPTER 2

## THE EFFECTS OF "MINIMAL" GROUP MEMBERSHIP IN CHILDREN ACROSS TIME

Young children and adults commonly exhibit in-group preference, even for members from novel or minimal groups wherein they have no reason or basis for such discrimination. Such preference is evidenced by children's biases in liking, resource allocation, explicit liking, and even memory for in-group members. However, little research has examined the impact of such minimal membership on children's memories for actions committed by in- and out-group members across time. Children in the current study heard stories involving in- and out-group protagonists and then answered a series of free-recall and forced-choice memory assessments. Initial evidence is presented that children's memories of events may be impacted by minimal group membership over the span of one or more weeks. Children generally recalled more negative than positive actions, but had better recall of positive actions committed by in- than out-group members during initial and follow-up experimental sessions. In addition, children had poorer recall of positive out-group actions across time.

# THE EFFECTS OF "MINIMAL" GROUP MEMBERSHIP IN CHILDREN ACROSS TIME

Children's eyewitness testimony often has probative value in court; however, much research suggests that children's recollections of events may not always be accurate, and are susceptible to many external influences (Ceci & Bruck, 1995). Given the weight their testimony often carries, it is important for judges, attorneys, and others to understand where and when children's memories might be affected by errors or biases in memory. For instance, group membership, even to novel or "minimal" groups, has been shown to induce bias in children within a single experimental session (e.g., Dunham, Baron, & Carey, 2011). However, less is known about what enduring impact group membership might have on children's recollections of events and actions perpetrated by in- and out-group members. In the current study, I explore the impact of children's group membership to "minimal" groups on their memories and attributions across time.

## Novel and Minimal Groups

Social psychological research has repeatedly found that mere categorization into novel groups can cause in-group favoritism and discrimination against out-group members; even randomly assigning members to arbitrary groups results in in-group favoritism. In his seminal studies, Tajfel (1970) proposed that discrimination amongst groups may occur even when there is no reason (e.g., self-interest) to discriminate amongst groups, and that such discrimination might take place even when an individual has no preexisting knowledge of or hostility or dislike against a group. In a series of experiments, participants of varying ages were assigned to novel groups with

which they had no prior association; the groups were based on simple categorization and after assignment the members were asked to allocate resources to in- and out-group members (Tajfel, 1970). Even when categorized by "flimsy and unimportant criteria," participants gave more money to in- rather than out-group members (Tajfel, 1970, p. 101). These and similar experimental procedures are known as minimal group paradigms (MGP).

In a truly minimal group, participants and minimal in- and out-group members never have face-to-face interactions; participants remain completely anonymous. Moreover, there is no link between group categorization and responses asked of participants, and the responses asked of participants hold no utilitarian value (Tajfel, Billig, Bundy, & Flament, 1971). Thus, true minimal groups are categorized but are value-neutral, and they experience no inter-group competition or differential status, and there is no opportunity to interact with in- or out-group members (Dunham et al., 2011).

Tajfel and colleagues (e.g., Tajfel & Turner, 1979) have argued that group membership, even to minimal groups, defines one's social identity. Social Identity Theory (SIT) posits that one's membership in a group is related to his or her self-image, which can be based on social categorization and discrimination amongst groups (Tajfel & Turner, 1979). Further, individuals wish to maintain or enhance their self-esteem and positive self-concept, and these can be linked to group membership. Thus, in order to maintain their social identity, individuals make comparisons amongst groups and tend to favor their in-group while differentiating themselves from out-groups (Tajfel & Turner, 1979). Although early research in this area examined adults,

more recent evidence for social identity theory has been found in children as well (e.g., Nesdale & Flesser, 2001), indicating that group membership has important implications for children as well.

## Implications of Group Identity

While much research has explored the effects of minimal group membership in children in a single experimental session, little research has investigated these effects across time. This is an important consideration given studies reveal group membership can impact children's behaviors, cognitive processes, attitudes, and memories, but lasting impact is what may be most relevant in many applied contexts, including law. For instance, children will protect the secrets of novel group members, even when it is personally costly to them (Misch, Over, & Carpenter, 2016), will mimic novel group members' behaviors (van Schaik & Hunnius, 2016), and will not consistently ask reliable out-group members for information, even when their own in-group members are unreliable (MacDonald, Schug, Chase, & Barth, 2013). Further, membership in a minimal group setting has also been shown to impact children's resource allocation decisions, as they often show in-group favoritism when asked to allocate resources to in-and out-group members (e.g., Abrams, Rutland, Ferrell, & Pelletier, 2008; Dunham et al., 2011).

### Implicit Attitudes

A robust body of literature indicates that minimal group membership greatly impacts individuals' implicit attitudes of in- and out-group members (e.g., Ashburn-Nardo, Voils, & Monteith, 2001). For instance, adults assigned to minimal groups show implicit biases in favor of their in-group and are faster to pair pleasant words

with their in-group and assign unpleasant words with their out-group on an implicit-association test (IAT; Ashburn-Nardo et al., 2001). Children's assessments, too, of unknown individuals are influenced by their minimal group membership. For instance, even in a minimal group setting where groups are defined only by t-shirt color (randomly assigned), children implicitly prefer in-group members (e.g., Dunham et al., 2011).

**Explicit Attitudes**

Research utilizing the MGP suggests that children's explicit attitudes about others can be impacted by group membership. Children as young as four (e.g., Hetherington, Hendrickson, & Koenig, 2014) and five (e.g., Dunham et al., 2011) explicitly prefer in-group compared to out-group members, and older children (those roughly nine years old and older) exhibit this explicit preference for in-group members as well (e.g., Abrams et al., 2008). Schug and colleagues found that children's liking of their in-group was not changed when viewing a puppet show depicting an egalitarian in-group and a stingy out-group, although their liking of the out-group decreased (Schug, Shusterman, Barth, & Patalano, 2013). Further, when their in-group was stingy but their out-group was egalitarian, no changes in liking occurred: In all conditions, children preferred their in-group to their out-group (Schug et al., 2013). These findings suggest that children may come to generalize information and expectations about in- and out-group members, even in minimal group settings. In contrast, other research has not supported this finding; when children view antisocial in-group members, they explicitly like such members less than pro-social out-group members or control members (Hetherington et al., 2014).

The consequences of minimal group membership do not stop with attitudes and behaviors. MGP also impacts individuals' tendencies to make spontaneous trait assessments and behavioral attributions about group members. Otten and Moskowitz (2000) found that adults assigned to minimal groups were more likely to infer positive traits about their in- compared to out-group and were more likely to positively stereotype their in-group, but not likely to derogate the out-group (Otten & Moskowitz, 2000). Further, Dunham and colleagues found that, although behavioral attributions were a weaker indicator of in-group bias compared to other measures of bias (e.g., implicit measures), children assigned negative actions equally to in- and out-group members, but were more likely to assign positive actions to in-group members (Dunham et al., 2011). Related research indicates children prefer peers who share similar beliefs and discriminatorily attribute prosocial behaviors such peers (Heiphetz, Spelke, & Banaji, 2014). Other work indicates that children expect that their in-group will be associated with positive future events (Patterson & Bigler, 2006).

**Memory**

Generally, social identity and motivation play active roles in individuals' memories of in- and out-group others. In an undergraduate sample utilizing a MGP, Bernstein and colleagues (2007) found that participants' better remember in- compared to out-group members (Bernstein, Young, & Hugenberg, 2007). Further, Van Bavel and Cunningham (2012) utilized a MGP to explore the impact of group identity on memory for faces of both in- and out-group members of different races. Their work indicates that participants had significantly better recognition memory for

in-group faces, regardless of member race, suggesting that even temporary self-categorization into a minimal group is stronger than the own race bias commonly exhibited (Meissner & Brigham, 2001; Van Bavel & Cunningham, 2012). Other research suggests that individuals have better recognition memory for unfavorable actions committed by out-group members than in-group members, while no difference exists in recognition memory for favorable actions (Howard & Rothbart, 1980). However, if participants are not categorized into a group until *after* learning about the groups, unfavorable actions are more memorable than favorable ones committed by both in- and out-group members (Howard & Rothbart, 1980). These results provide evidence to suggest that categorization into even minimal groups impacts learning and encoding of new information. The link between minimal group membership and group-dependent memory formation emerges early in development. Dunham and colleagues (2011) found that children generally remember more negative than positive actions, regardless of group membership. However, positive actions were recalled more frequently for in-group members compared to out-group members (Dunham et al., 2011). This work suggests that even minimal group membership creates selectively-valenced distortions of memory in young children.

In sum, literature suggests that group membership, even in novel or minimal settings, impacts the way that we perceive in- and out-group members, make assessments and inferences about member behaviors (which group is more likely to attribute bad acts to their in-group), and suggests that group membership has lasting consequences for how its members interpret new information.

## Study Overview

The primary purpose of the current study is to build on existing work showing the effects of minimal group membership on children's memory using an experimental paradigm to examine children's memories of actions committed by in- and out-group members immediately and also after a delay. As noted above, children's memories for events differ across groups within a single experimental session, but less is known about whether minimal group membership has a lasting impact on children's memories of groups across time. Building on previous findings, I hypothesized that: (i) children would exhibit the negativity bias found with adults, recalling and recognizing more negative than positive actions, regardless of group membership; (ii) children would recall and recognize relatively more positive actions for in- as opposed to out-group members, and (iii) that these results would hold across time and thus be present at two time points, Time I and II. Further, in line with existing research, I hypothesized that children would make positive behavioral inferences about minimal in-group members, would prefer their in-group members to out-group members, and would make spontaneous positive trait assessments about their in-group. Thus, in addition to the expected predictions regarding memory, the present study also anticipated group differences in trait assessments and behavioral inferences.

In addition to examining the effects of group membership over time rather than at one time-point, the current study extends previous research by using an even more *minimal* paradigm than that used in previous research (Dunham et al., 2011). Previous research indicates that children exhibit higher levels of in-group bias and favoritism when novel groups are used functionally and are addressed using labels compared to

when children are categorized into minimal groups that are not discussed with such labels (e.g., Patterson & Bigler, 2006). Further, when noun labels and novel groups are used functionally, younger children and those with high self-esteem show exacerbated levels of in-group bias when making peer assessments compared to those who do not use such labels. The current study tests predictions using a true minimal group paradigm, without emphasizing group membership or utilizing noun labels for groups. That is, nothing was done to make group membership salient. This was done in order to explore how *little* categorization is needed to induce biases so that we may further understand the boundary conditions and roots of such biases to isolate and examine effects of group membership independently of labels given to groups.

Further, the current study also did not suggest competition between minimal groups as research suggests that competition reinforces children's views of social categories and influences children's beliefs about how individuals should and will behave within group contexts. Because I am most interested in children's explicit biases and in examining such biases of memory in a truly minimal setting, no such procedures were used.

## Methods

### Design

The current study utilized a within-participant design. All participants were randomly assigned to a group using t-shirts of different colors (orange vs. green vs. yellow t-shirts). In the experimental groups, children heard stories and made assessments of both in- and out-group members. In the control group, children heard

stories and made assessments of out-group members only (these children never saw members of their own in-group).

**Participants**

Participants in the current study were 62 children, ranging in age from 4 - 11 years of age ($M$ = 6.5, $SD$ = 2.33). A large age range was chosen in order to explore age-related effects of minimal group membership. Recent research indicates that, while group preference ("in-group love") may be seen in young children, out-group derogation ("out-group hate') is seen only in older children, beginning around six years of age (Buttelmann & Bohm, 2014). Thus, the current age range would allow for the exploration of attribution across development.

The sample consisted of 34 female and 27 male children (no gender provided for one child). Children were recruited from local daycare centers and afterschool programs. The sample was primarily European American (64.8% European American, 14.8% Asian, 3.7% Hispanic, 1.9% African American, and 14.8% "Other"). All data collection took place in the daycare or afterschool setting. Children were recruited in-person and via letters sent home through the daycares and afterschool programs to parents, and consent was obtained in advance of testing. All children received stickers for their participation at Time I and Time II.

**Procedure**

During the first testing session (Time I), children met with an experimenter and were shown three buttons (green, orange, and yellow). The experimenter then placed the buttons in a bag, mixed them up, and asked the child to reach into the bag to select a button. This button corresponded with the child's group membership for the duration

of the study. The child was then asked to wear a t-shirt that corresponded to the color of the button selected. Children were then told that they would hear stories about and view pictures of children in different colored t-shirts. Children who selected yellow buttons were placed into a control condition: These children never viewed photos or heard stories of members of their in-group. Importantly, noun labels were never used during the group categorization process (e.g., "your group" or "the other group"). Children were told simply that they would be wearing a t-shirt while participating in several activities and that they would view other children wearing different colored t-shirts.

Children then sat in front of a laptop computer and heard two stories while viewing an image of a gender-matched protagonist. Children heard one story referencing an in-group member (same colored t-shirt) and one of an out-group member (other colored t-shirt), except for children in the control, who never heard a story about an in-group member. The photo of the protagonist was shown on the laptop screen for the duration of the story, and the experimenter read the stories to the children.

In each story, the protagonist engaged in two positive (e.g., shared a toy, helped clean up) and two negative acts (e.g., broke something, tripped someone), for a total of four acts per story. The stories were counterbalanced so that the order of the stories (in-group story first vs. out-group story first) and story pairing (whether a story was paired with an in- or out-group member) varied between subjects. Stories were written as short narratives and were each roughly 170 words in length (168 – 173

words, See appendix A). After hearing the stories, children were led through several measures, described below.

**Stimuli**

Stimuli were eight color photos of European American children (four boys and four girls). The photos were cropped to the head and shoulder, and all children wore black hats and had neutral facial expressions (Dalrymple, Gomez, & Duchaine, 2013). Photographs were edited using computer software such that half of the children wore either orange or green t-shirts, for a total of two boys and two girls per colored t-shirt group. Photos were gender-matched to the children such that girls always saw photos of girls and boys always saw photos of boys (See appendix B).

**Measures for Time I**

All measures were presented in a fixed order. While some measures discussed below seem conceptually similar (e.g., behavioral attributions, explicit liking), a factor analysis was not used as these variables were chosen based on prior research indicating they each tap some unique variance (e.g., Dunham et al., 2011). All questions were read aloud to the children.

***Free Recall.*** Immediately after hearing the two stories, children were asked free-recall questions. They were first asked to recall everything they could remember from the stories. When they were finished, they were prompted to recall any additional information they remembered from the stories. Next, they were asked to recall anything good that the children did in the stories followed by anything bad the children did. Children spoke for as long as they wanted. When they were finished, the experimenter began the next task.

***Forced-Choice Memory Assessment.*** Next, children were asked a series of eight forced-choice memory questions regarding the stories. The photos of the two protagonists appeared on the screen, side by side, and children were then asked which of the children committed a particular action from the story (e.g., *Which child stole a toy? Which child brought cookies?*). The presentation of these questions was randomized. Further, for half of the questions, the in-group member appeared first while for the other half, the out-group member appeared first.

***Behavioral Attributions.*** Next, children completed eight trials where they made forced-choice behavioral predictions about target photos. The photos of one in- and one out-group member appeared on the screen, side by side, and children were then asked which of the children would commit a certain act (e.g., *Which of these children would receive the most time-outs? Which of these children would be most likely to help a friend?*). The stimuli for this task included the images of the two protagonists from the stories and two new children for a total of two in- and two out-group members. The presentation of these questions was randomized. Further, for half of the questions the in-group member appeared first while for the other half the out-group member appeared first.

***Explicit Liking.*** Children next completed four trials of an explicit liking task. First, the experimenter presented the child with a smiley face Likert-type scale ranging from 1 (a frowning face) to 5 (a very smiley face). Children were told that 1 indicated they really did not like the child while 5 meant they really liked the child. Children were asked to point to the smiley face that showed how much they liked each child. Once children acknowledged the instructions, a single face appeared on the screen of

either an in- or out-group member, and children were asked to point to the smiley which indicated how much they liked the child. Such scales have been commonly used in research, and children exhibit an understanding of how to use such scales (e.g., Bregant, Shaw, & Kinzler, 2016; Olson, Banaji, Dweck, & Spelke, 2006). There were a total of four trials, and all in- and out-group members were shown, and children's forced-choice responses were recorded. The presentation of these questions was randomized.

***Trait Assessment.*** Children next completed eight trials of a trait assessment task. The photos of one in- and one out-group member appeared on the screen, side by side, and children were asked which of the children matched a trait (e.g., *Which of these children is friendly? Which of these children is mean?*). Children's forced-choice responses were recorded. The presentation of these questions was randomized. Further, for half of the questions, the in-group member appeared first while for the other half the out-group member appeared first.

***Group Preference.*** Children then completed three forced-choice group assessment measures (e.g., *Which group would you want to be in?*) and were asked to pick either the orange or green group. The presentation of these questions was randomized. Next, children were thanked for their time, given a sticker, and told that the experimenter would return in roughly one week.

**Measures for Time II**

At a follow up session, which occurred roughly one week after the first session (Range: 3 – 21 days, $M = 8.53$, $SD = 3.48$), children met with an experimenter again. Every attempt was made to ensure that the experimenter remained the same for both

sessions. Importantly, children's minimal group was not reintroduced at this time; children did not wear colored t-shirts for the second experimental sessions. First, children were asked to complete the free-recall memory tasks as described above. Next, they completed the forced-choice memory assessment as described above. Lastly, children were thanked for their time, given a sticker, and were debriefed.

## Results

### Free Recall

***Time I.*** First, analyses were conducted to compare free recall of total positive and negative actions recalled and total accuracy of actions recalled between experimental and control participants. On average, children accurately recalled 2.19 actions ($SD$ = 1.70). No differences were found between the experimental and control groups, $F$ (1, 59) = .001, $p$ = .98, $np^2$ < .001. As predicted, among participants in both the experimental and control groups, more negative actions were recalled ($M$ = 1.36, $SD$ = 1.08) than positive actions ($M$ = .87, $SD$ = .92, $F$ (1, 59) = 8.74, $p$ = .004, $np^2$ = .13). Accuracy improved with increasing age, β = .62, $p$ < .001.

Again, as predicted, analyses revealed that children recalled significantly more positive actions for in- ($M$ = .49, $SD$ = .62) versus out-group members ($M$ = .43, $SD$ = .65, $F$ (1, 46) = 10.41, $p$ = .002, $np^2$ = .19). However, analyses revealed no difference between negative actions recalled for in-group ($M$ = .79, $SD$ = .78) versus out-group members ($M$ = .62, $SD$ = .64, $F$ (1, 46) = 1.44, $p$ = .24, $np^2$ = .03).

***Time II.*** First, analyses were conducted to compare free recall of total positive and negative actions recalled and total accuracy of actions recalled between experimental and control participants. No differences were found between groups, $F$

(1, 51) = .12, $p$ = .74, $np^2$ = .002. Among participants in both the experimental and control groups, there was a trend for participants to recall more negative ($M$ = .96, $SD$ = 1.02) than positive actions ($M$ = .66, $SD$ = .88, $F$ (1, 51) = 3.76, $p$ = .06, $np^2$ = .07). On average, children accurately recalled 1.65 actions ($SD$ = 1.67). Accuracy improved with increasing age, β = .43, $p$ = .003.

Analyses revealed that children recalled significantly more positive actions for in-group ($M$ = .44, $SD$ = .64) versus out-group members ($M$ = .23, $SD$ = .49, $F$ (1, 38) = 4.75, $p$ = .04, $np^2$ = .11. However, no difference was found between negative actions recalled for in-group ($M$ = .46, $SD$ = .68) versus out-group members ($M$ = .54, $SD$ = .68, $F$ (1, 38) = .37, $p$ = .55, $np^2$ = .01).

***Time I versus Time II.*** Analyses revealed no difference in recall of positive in-group actions across time ($F$ (1, 39) = 2.58, $p$ = .12, $np^2$ = .06) or negative in-group actions across time, $F$ (1, 39) = 2.58, $p$ = .12, $np^2$ = .06. However, there is evidence of a reduction in recall of positive out-group actions across time: Participants recalled fewer positive actions involving the out-group at Time II ($M$ = .23, $SD$ = .49) compared to Time I ($M$ = .39, $SD$ = .63, $F$ (1, 38) = 8.16, $p$ = .007, $np^2$ = .18). However, there was no difference in free-recall of negative out-group actions across time, $F$ (1, 38) = 1.72, $p$ = .20, $np^2$ = .04. Figure 1 presents mean recall by valence and group across time.

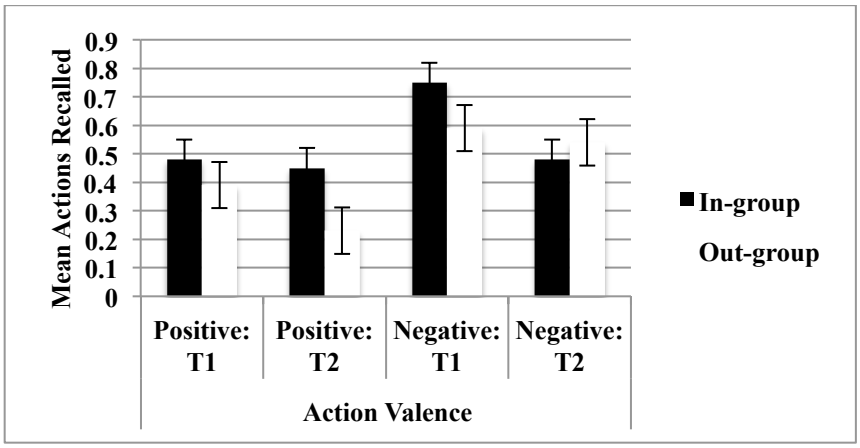



*Figure 1:* Mean number of actions recalled by valence (positive vs. negative) and group (in-group vs. out-group) out of four total actions across time. Error bars represent standard errors of the means.

**Forced-Choice Memory Assessment**

***Time I.*** First, analyses were conducted to compare recognition of total positive and negative actions recognized and total accuracy of actions recognized between experimental and control participants. No differences were found between groups in terms of overall accuracy, $F$ (1, 59) = .52, $p$ = .47, $np^2$ = .01. There were no differences between the experimental and control groups in recognition of positive ($F$ (1, 59) = 1.05, $p$ = .31, $np^2$ = .02) or negative actions, $F$ (1, 59) = .004, $p$ = .95, $np^2$ < .001. On average, children accurately recognized 4.02 actions ($SD$ = 1.97). Accuracy did not improve with age, β = -.08, $p$ = .57.

Analyses revealed no difference between positive actions recognized for in- versus out-group members ($F$ (1, 46) = .11, $p$ = .75, $np^2$ = .002) and no difference between negative actions recalled for in- versus out-group members, $F$ (1, 46) = .01, $p$ = .91, $np^2$ < .001.

***Time II.*** First, analyses were conducted to compare recognition of total positive and negative actions recognized and total accuracy of actions recognized

between experimental and control participants. No differences were found between groups in terms of total recognition accuracy, $F$ (1, 51) = .74, $p$ = .39, $np^2$ = .01. Among participants in both the experimental and control groups, there was no difference between recognition of positive ($F$ (1, 51) = .32, $p$ = .57, $np^2$ = .01) or negative actions, $F$ (1, 51) = .14, $p$ = .71, $np^2$ = .003. On average, children accurately recognized 3.74 actions ($SD$ = 1.87).

Analyses revealed no difference between positive actions recognized for in- versus out-group members ($F$ (1, 39) = .20, $p$ = .66, $np^2$ = .005) and no difference between negative actions recognized for in- versus out-group members, $F$ (1, 39) < .001, $p$ = 1, $np^2$ < .001. Once again, recognition accuracy did not improve with age, β = -.13, $p$ = .38.

***Time I versus Time II.*** Analyses revealed no difference in recognition of positive in-group actions across time ($F$ (1, 39) = .01, $p$ = .92, $np^2$ < .001) or negative in-group actions across time, $F$ (1, 39) = .58, $p$ = .45, $np^2$ = .02. Further, no differences were found in recognition of positive out-group actions across time ($F$ (1, 39) = .09, $p$ = .76, $np^2$ = .002) or negative out-group actions across time, $F$ (1, 39) = .65, $p$ = .43, $np^2$ = .02. Figure 2 presents mean recognition by valence and group across time.

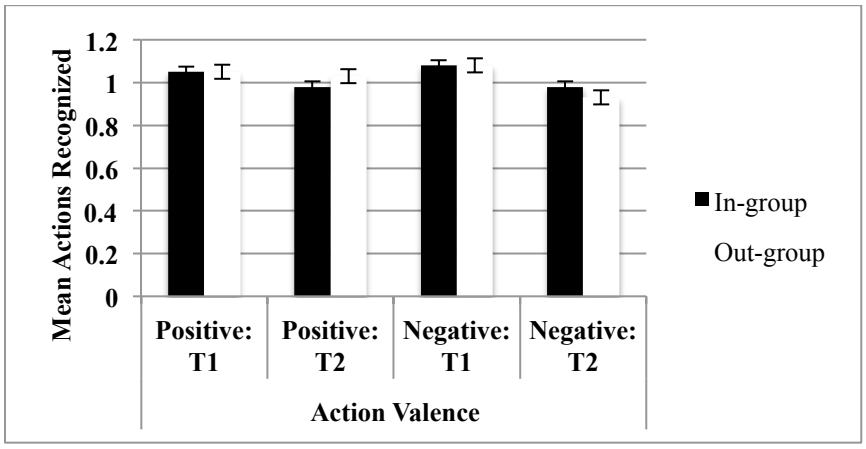



*Figure 2:* Mean number of actions recognized by valence (positive vs. negative) and group (in-group vs. out-group) out of four total actions across time. Error bars represent standard errors of the means.

**False Memory**

***Categorizing false memory.*** Where participants remembered something that did not happen, this was categorized as a false memory. Where participants had a false memory this was categorized as false memory for a positive act, false memory for a neutral act, or false memory for a negative act. Each participant was given a score for their total false memory for positive, negative, and neutral acts from their in-group, and total false memory for positive, negative, and neutral acts from their out-group.

***Time I.*** First, an analysis of variance was conducted to compare types of false memory for in-group and out-group members. This analysis had two within-subjects factors – type of false memory (negative, neutral, or positive) and group false memory (in-group, or out-group). This analysis revealed a significant main effect of type of false memory, $F$ (2, 60) = 5.77, $p$ = .005, $np^2$ < .16. Participants had significantly more false memories for negative actions than for neutral actions ($M_{negative}$ = .10, $SE$ = .03, $M_{neutral}$ = .02, $SE$ = .01, $p$ = .028).

***Time II.*** This analysis was also conducted using the Time II data. At this time point there was no longer a significant main effect of type of false memory ($p = .66$). There was a marginally significant two-way interaction between type of false memory and group false memory. This interaction is displayed in Figure 3. It suggests that participants had more negative false memory for their in-group, and more positive false memory for their out-group, although follow-up pairwise comparisons did not indicate significant differences.

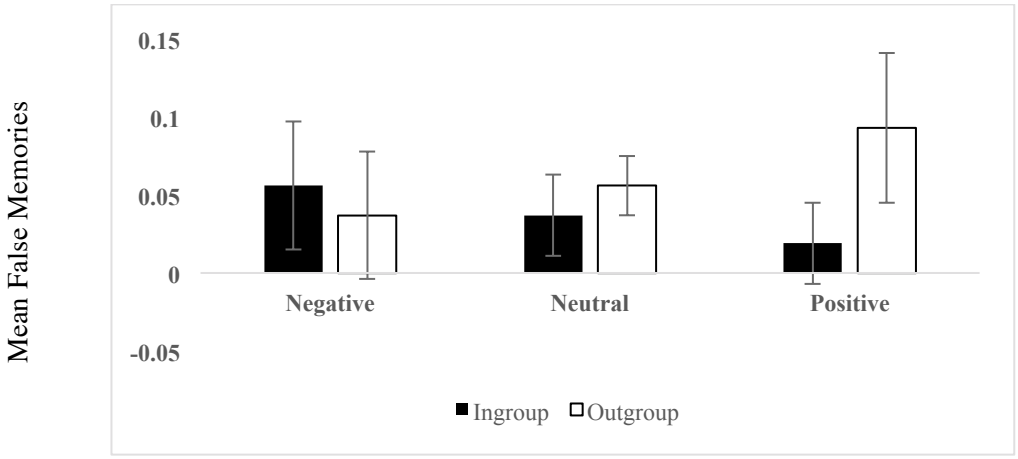



*Figure 3*. Marginally significant two-way interaction between false memory type and group false memory was regarding. Error bars represent standard errors of the means.

**Behavioral Attributions**

Behavioral attributions were measured at Time I only. Unexpectedly, there was no difference between children's perceptions of which group would be more likely to commit good acts, $F\ (1, 46) = .05$, $p = .82$, $np^2 = .001$. In contrast to our expectation, children were more likely to attribute bad acts to their in-group ($M = 2.04$, $SD = 1.22$) compared to the out-group ($M = 1.85$, $SD = 1.18$, $F\ (1, 46) = 6.24$, $p = .02$, $np^2 = .102$. Figure 4 presents children's behavioral attributions.

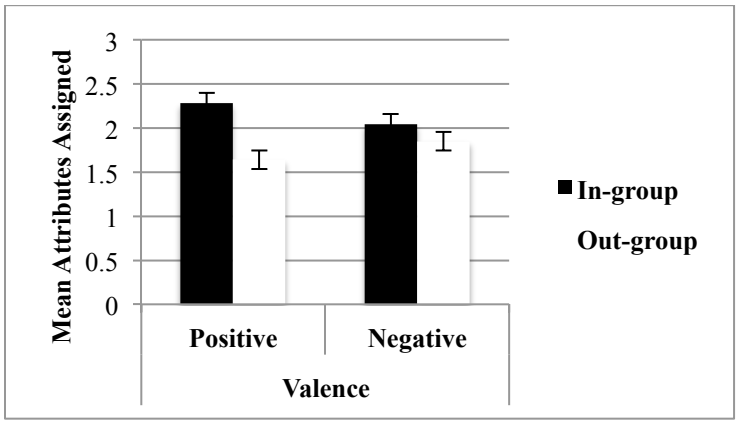



*Figure 4:* Behavioral attributions by valence (positive vs. negative) and group (in-group vs. out-group) out of four total actions. Error bars represent standard errors of the means.

**Group Preference and Explicit Liking**

Children did not show explicit preference for their groups. In the experimental condition, 47 children responded to questions of preference regarding in- and out-group members. When asked which group they would like to be in, which group they would like to play with, and which group they would trust, children showed no group preference, $\chi^2 = .58$, $p = .97$. Overall, they did not show an explicit preference for their in-group ($M = 3.23$, $SD = 1.15$) compared to their out-group ($M = 3.05$, $SD = 1.13$, $t(46) = 1.03$, $p = .31$). Figure 5 presents children's mean explicit liking scores.

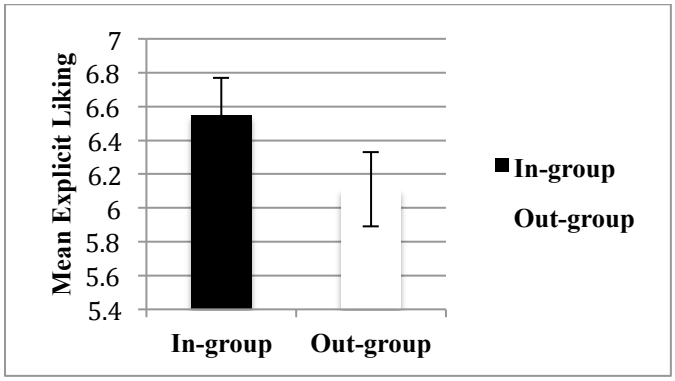



*Figure 5:* Mean explicit liking by group (in-group vs. out-group) out of 10. Error bars represent standard errors of the means.

**Trait Assessment**

Trait assessments were measured at Time I only. Unexpectedly, there was no difference between children's perceptions of which group was associated with positive traits between the in-group ($M$ = 2.30, $SD$ = 1.38) and out-group ($M$ = 1.55, $SD$ = 1.36), $F$ (1, 46) = 2.00, $p$ = .16, $np^2$ = .04. Further, there was also no difference between children's perceptions of which group was associated with negative traits between the in-group ($M$ = 1.55, $SD$ = 1.22) and out-group, $M$ = 2.04, $SD$ = 1.27, $F$ (1, 46) = 1.18 $p$ = .28, $np^2$ = .03. No age effects were found for either positive ($F$ (1, 40) = 1.31, $p$ = .26, $np^2$ = .03) or negative trait assessment ($F$ (1, 40) = .05, $p$ = .95, $np^2$ < .001). Figure 6 presents children's group trait assessments.

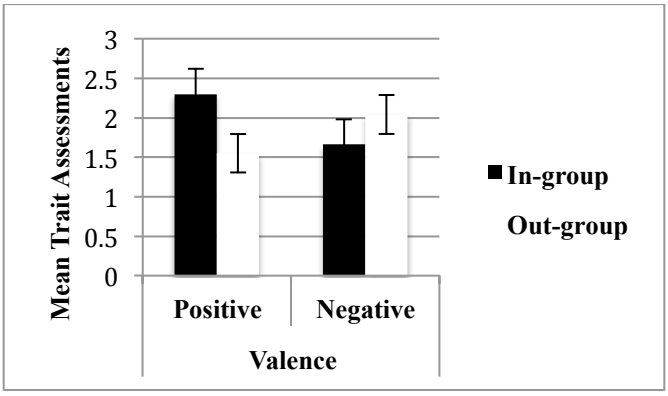



*Figure 6:* Mean trait assessments by valence (positive vs. negative) and group (in-group vs. out-group) out of four total traits. Error bars represent standard errors of the means.

## Discussion

The current study provides evidence to suggest that minimal group membership impacts children's memories for in- and out-group actions across time, however, although the results confirmed some hypotheses, the pattern of results also failed to confirm several of our hypotheses derived from the literature. Although

children heard stories about both in- and out-group members detailing positive and negative actions, their free-recall was biased in favor of their in-group at both Time I and II, as evidenced by their recalling more positive actions committed by in- versus out-group members. This has important implications given the truly minimal group induction utilized in the current study: In view of the fact that children were never asked to name their group, categorize themselves or group members, nor were they given noun labels for their groups, their recall for their in-group were biased across time in the predicted direction.

At Time I and II, children in both the experimental and control groups recalled more negative than positive actions, replicating Dunham et al. (2011). As expected, at Time I and II, there was no difference in recall for negative actions committed by in- or out-group members, but children did recall more positive actions committed by in- versus out-group members. Further, children experienced reduced recall of positive out-group actions across time. In contrast, their recall for in-group members did not differ across time. This is an important new finding and may suggest that, over time, children begin to generally associate more positive actions with their in-group compared to the out-group. Children may not be able to easily recall specific actions across time, but may have an abstract sense that their in-group is preferred over an out-group. Sherman and colleagues (1998) found that, for positive actions committed by in-group members and negative actions committed by out-groups members, participants do not recall specifics, but rather retrieve general conceptions of their group.

However, there were no differences found between recognition of positive and negative events, and accuracy was generally quite high for all groups for both positive and negative actions. This may suggest that although children's free recall begins to show in-group bias across time, their recognition accuracy remains high and, under these truly minimal conditions, is less likely to become distorted by group membership. As noted above, significant effects were seen for free-recall but not recognition memory. This suggests membership in minimal groups may not actually distort children's underlying memory, but rather, that it affects their ease of retrieval. Recall entails more effortful retrieval processes, and perhaps this disjunction shows that minimal group membership provides an easy default retrieval cue that is used when the actual cue is not provided as it is in a recognition paradigm. Thus, the contrast between the in-group superiority for free recall over recognition may reflect the use of a schema to guide recollection that is preempted by the availability of the cue inherent in the recognition test, which obviates the need for stereotypes, schemas, and scripts in support of the retrieval of actions (Gillund & Shiffrin, 1984).

While there was no difference between children's inferences about which group would be likely to commit positive acts, children were more likely to attribute negative acts to their in-group compared to out-group. Similarly, there was no difference in children's spontaneous trait inferences in regards to positive traits associated with their in- or out-group. Previous research also found no difference between children's inferences about negative traits associated with in- or out-group members (e.g., Otten & Moskowitz, 2000). However, these results stand in contrast to research by Dunham and colleagues (Dunham et al., 2011) who found that children

were more likely to attribute positive traits to in-group members, and in contrast to Patterson and Bigler (2006) who found that children expect their in-group to be associated with positive future events. In the current study, an even more minimal group induction than those used by Dunham and colleagues (2011) or Patterson and Bigler (2006) was utilized. Further, Dunham and colleagues (2011) found that behavioral attributions were a weaker measure of group bias compared to implicit measures, even using a stronger group categorization than those methods used here.

In line with previous research, children trended to prefer their in-group compared to their out-group. However, in contrast to previous work (e.g., Abrams et al., 2008; Dunham et al., 2011; Hetherington, Hendrickson, & Koenig, 2014; Schug et al., 2013), children in the current study did *not* explicitly like their in-group more than their out-group. These differences, too, may be explained by the extremely minimal group induction used in the current study. Further, children in the story stimuli used in the current study engaged in negative actions (e.g., tripping), which may have made a strong impression on children. Hetherington and colleagues (2014) found that anti-social in-group members were liked less than prosocial out-group members and controls. This may lend to support to our finding that children's in-groups in the current study were not explicitly preferred to their out-group in Time I, when their memories of negative actions committed by their group were still fresh. Truly minimal induction procedures like those utilized here may be too weak to induce such group bias in one experimental session. Further, many of the children in the current sample were quite young (~4 years old), and research by Aboud (2003) suggests that bias is stronger for children ages 5 and 6 compared to those younger than 5.

Importantly, the current study suggests that even extremely minimal group inductions can cause distortions in perceptions across time. Previous research has utilized explicit labels (e.g., Dunham et al., 2011, Experiment 2; Hetherington et al., 2014) and competition (e.g., Abrams et al., 2003) during minimal group induction, but children in our sample were never given an explicit label to their in- or out-groups. Further, children were not reminded of their group membership at Time II, and yet, their memories for actions committed by their in-group were still distorted across time.

Future research should examine individual differences that might exacerbate in-group favoritism in such minimal settings. Further, future work should explore what traits or processes might disrupt the rapid emergence of such biases, even in such weak settings. Finally, future research should investigate how lasting of an impact minimal group membership makes on individuals across the lifespan.

REFERENCES

Aboud, F. E. (2003). The formation of in-group favoritism and out-group prejudice in young children: Are they distinct attitudes?. *Developmental Psychology*, *39*(1), 48-60.

Abrams, D., Rutland, A., & Cameron, L. (2003). The development of subjective group dynamics: Children's judgments of normative and deviant in-group and out-group individuals. *Child Development*, *74*(6), 1840–1856.

Abrams, D., Rutland, A., Ferrell, J. M., & Pelletier, J. (2008). Children's judgments of disloyal and immoral peer behavior: Subjective group dynamics in minimal intergroup contexts. *Child Development*, *79*(2), 444–461.

Ashburn-Nardo, L., Voils, C. I., & Monteith, M. J. (2001). Implicit associations as the seeds of intergroup bias: How easily do they take root? *Journal of Personality and Social Psychology*, *81*(5), 789.

Bernstein, M. J., Young, S. G., & Hugenberg, K. (2007). The cross-category effect mere social categorization is sufficient to elicit an own-group bias in face recognition. *Psychological Science*, *18*(8), 706–712.

Bregant, J., Shaw, A., & Kinzler, K. D. (2016). Intuitive jurisprudence: Early reasoning about the functions of punishment. *Journal of Empirical Legal Studies*, *13*(4), 693-717.

Buttelmann, D., & Böhm, R. (2014). The ontogeny of the motivation that underlies in-group bias. *Psychological Science*, *25*(4), 921-927.

Cadinu, M. R., & Rothbart, M. (1996). Self-anchoring and differentiation processes in the minimal group setting. *Journal of Personality and Social Psychology*, *70*(4), 661.

Ceci, S. J., & Bruck, M. (1995). *Jeopardy in the courtroom: A scientific analysis of children's testimony*. Washington, DC: American Psychological Association.

Dalrymple, K.A., Gomez, J., & Duchaine, B. (2013). The Dartmouth Database of Children's Faces: Acquisition and validation of a new face stimulus set. *PLoS One, 8*(11): e79131

Dunham, Y., Baron, A. S., & Carey, S. (2011). Consequences of "minimal" group affiliations in children. *Child Development*, *82*(3), 793–811.

Enesco, I., Lago, O., Rodríguez, P., & Guerrero, S. (2011). "We are the good guys but they are not bad." In-group positivity and cognitive performance in preschoolers. *British Journal of Developmental Psychology*, *29*(3), 593–611.

Falk, C. F., Heine, S. J., & Takemura, K. (2014). Cultural variation in the minimal group effect. *Journal of Cross-Cultural Psychology*, *45*(2), 265–281.

Gillund, G., & Shiffrin, R. M. (1984). A retrieval model for both recognition and recall. *Psychological Review*, *91*, 1-67.

Gramzow, R. H., Gaertner, L., & Sedikides, C. (2001). Memory for in-group and out-group information in a minimal group context: The self as an informational base. *Journal of Personality and Social Psychology*, *80*(2), 188.

Heiphetz, L., Spelke, E. S., & Banaji, M. R. (2014). The formation of belief-based social preferences. *Social Cognition*, *32*(1), 22-47.

Hetherington, C., Hendrickson, C., & Koenig, M. (2014). Reducing an in-group bias in preschool children: The impact of moral behavior. *Developmental Science*, *17*(6), 1042–1049.

Howard, J. W., & Rothbart, M. (1980). Social categorization and memory for in-group and out-group behavior. *Journal of Personality and Social Psychology*, *38*(2), 301.

MacDonald, K., Schug, M., Chase, E., & Barth, H. (2013). My people, right or wrong? Minimal group membership disrupts preschoolers' selective trust. *Cognitive Development*, *28*(3), 247–259.

Master, A., & Walton, G. M. (2013). Minimal groups increase young children's motivation and learning on group-relevant tasks. *Child Development*, *84*(2), 737–751.

Meissner, C.A. & Brigham, J.C. (2001). Thirty years of investigating the own-race bias in memory for faces: A meta-analytic review. *Psychology, Public Policy and Law, 7*, 3-35.

Misch, A., Over, H., & Carpenter, M. (2016). I won't tell: Young children show loyalty to their group by keeping group secrets. *Journal of Experimental Child Psychology*, *142*, 96–106.

Nesdale, D., & Flesser, D. (2001). Social identity and the development of children's group attitudes. *Child Development*, *72*(2), 506–517.

Olson, K. R., Banaji, M. R., Dweck, C. S., & Spelke, E. S. (2006). Children's biased evaluations of lucky versus unlucky people and their social groups. *Psychological Science*, *17*(10), 845.

Otten, S., & Moskowitz, G. B. (2000). Evidence for implicit evaluative in-group bias: Affect-biased spontaneous trait inference in a minimal group paradigm. *Journal of Experimental Social Psychology*, *36*(1), 77–89.

Patterson, M. M., & Bigler, R. S. (2006). Preschool children's attention to environmental messages about groups: Social categorization and the origins of intergroup bias. *Child Development*, *77*(4), 847–860.

Pinter, B., & Greenwald, A. G. (2011). A comparison of minimal group induction procedures. *Group Processes & Intergroup Relations*, *14*(1), 81–98.

Rhodes, M., & Brickman, D. (2011). The influence of competition on children's social categories. *Journal of Cognition and Development*, *12*(2), 194–221.

Schug, M. G., Shusterman, A., Barth, H., & Patalano, A. L. (2013). Minimal-group membership influences children's responses to novel experience with group members. *Developmental Science*, *16*(1), 47–55.

Sherman, J. W., Klein, S. B., Laskey, A., & Wyer, N. A. (1998). Intergroup bias in group judgment processes: The role of behavioral memories. *Journal of Experimental Social Psychology*, *34*(1), 51–65.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American*, *223*(5), 96–102.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, *1*(2), 149–178.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. *The Social Psychology of Intergroup Relations*, *33*(47), 74.

Van Bavel, J. J., & Cunningham, W. A. (2012). A social identity approach to person memory group membership, collective identification, and social role shape attention and memory. *Personality and Social Psychology Bulletin*, *38*(12), 1566–1578.

van Schaik, J. E., & Hunnius, S. (2016). Little chameleons: The development of social mimicry during early childhood. *Journal of Experimental Child Psychology*, *147*, 71–81.

# CHAPTER 3

# PULLING AWAY FROM THE TRIGGER: THE INFLUENCE OF PURPOSE IN LIFE AND SELF-AFFIRMATION ON SHOOTING DECISIONS


## Abstract

Recent data suggests large racial disparities in police killings in the U.S. (Swaine & McCarthy, 2017). It is important to explore ways to reduce racial biases, which in turn may lead to a reduction in wrongful shootings. The current study explored the impact of self-affirmation and purpose in life on mock police officer decisions to shoot. Participants completed a writing task (Self-affirmation vs. Purpose in Life vs. Control) and then participated in a simple first-person shooter video game, where they were asked to shoot armed suspects and not to shoot unarmed suspects varying in race (African American vs. European American). Participants in the control and self-affirmation conditions were more accurate in their decisions regarding armed versus unarmed suspects, while individuals in the purpose condition were equally accurate. Further, decision accuracy was worse for unarmed compared to armed African American suspects, while no differences in accuracy were found for European American suspects. Shooting decision reaction time was also significantly reduced for participants in the purpose compared to self-affirmation or control conditions.

# PULLING AWAY FROM THE TRIGGER: THE INFLUENCE OF PURPOSE IN LIFE AND SELF-AFFIRMATION ON SHOOTING DECISIONS

On any given day, individuals may confront threats and stressors, big and small (Sherman & Cohen, 2006). However, some individuals may be more likely to experience or perceive threat or stress due to situational factors, including their occupation. Police officers, for instance, may experience stressors related to organizational practices (e.g., paperwork, politics within a department), and importantly, to specific factors of the work itself (e.g., experiencing a colleague being killed) (e.g., Violanti & Aron, 1995). Evidence from one study suggests that the leading stressor for police officers is the fear of killing someone while on duty, while the fear of being attacked follows as a close second (Violanti & Aron, 1995). These stressors and perceptions of threat may relate to officer-involved shootings and improper shootings. Fatal officer-involved shootings have risen over the past decade, but data involving the situational factors relating to these decisions to shoot is lacking (Burch & Cave, 2017). What factors might impact officers' decisions to shoot and shooting decision accuracy? Further, can decision accuracy be improved?

Police officers, like the general public, may hold implicit racial biases, which can impact decisions to shoot and shooting reaction time (Correll, Hudson, Guillermo, & Ma, 2014). Further, police officers are often required to interact with a diverse general public, who may be armed or unarmed. Thus, officers may sometimes be in a position to make split-second decisions based on their own discretion and perceptions of threat, and must quickly make decisions as to whether to shoot suspects in

ambiguous situations. Implicit biases in police officers may lead to tragic consequences in decisions to shoot. Recent data suggests large racial disparities in police killings in the US (Swaine & McCarthy, 2017). In 2016, black males were nine times more likely to be killed by police officers compared to other Americans, and four times more likely than young white men (Swaine & McCarthy, 2017). Importantly, 169 unarmed individuals were killed by police in 2016 (Swaine & McCarthy, 2017). It is important to explore ways to reduce implicit racial biases, which in turn might lead to a reduction of wrongful shootings.

Research suggests that purpose in life and self-affirmation can help individuals to combat negative feelings and behaviors that result from experiencing threats and stressors, and can help buffer against stress (Burd & Burrow, 2017). Thus, purpose in life and self-affirmation might serve as useful interventions for individuals confronting stressful situations generally, and those who must confront their discomfort with diversity. Given that purpose in life and self-affirmation can help reduce discomfort with diversity and reactivity to and recovery from threat, these interventions may have important implications for police officers' decisions to shoot. In the current study, I investigate the impact of purpose in life and self-affirmation writing interventions on mock police officer decisions to shoot, shooting accuracy, and decision response time.

**Perceptions of Threat, Police Use of Force, and Police Shooting Decisions**

Many factors impact police officers' decisions to use force. One study exploring the situational factors relating to police use of force found that both encounter and suspect characteristics play a large role in officers' decisions to use force (Bolger, 2015). "Encounter" characteristics are those involving factors related to

the interaction between the officer and a suspect (e.g., seriousness of the offense, whether the suspect resists or is arrested, officer perceptions of dangerousness) (Bolger, 2015). Work by Bolger (2015) suggests that seriousness of the offense, suspect resistance, citizens involvement in the conflict, and involvement of other police officers all relate to an increased likelihood of use of force. In terms of suspect characteristics, use of force is more likely when suspects are male, minorities, from a lower social class, or hostile (Bolger, 2015). Importantly, many encounter and suspect characteristics are subjective and open to the discretion of the officer to report. Thus, given this line of work, perceptions of threat may relate to use of force.

Threat can take many forms and can impact individuals' perceptions and behaviors in important ways. One source of threat that may be pertinent to police officers, among others, is discomfort with diversity. Much research indicates that individuals perceive threat from increasing diversity (e.g., Burrow et al., 2013, 2014a; Outten, Schmitt, Miller, & Garcia, 2012). In one study, Fossett and Kiecolt (1989) found that as the percentage of African Americans in the population increased, Caucasian Americans perceptions of threat increased, and their support for integration decreased. Relatedly, work by Semyonov, Raijman, Tov, and Schmidt (2004) suggests that as the perceived size of foreign populations increases, citizens' experience increased threat and are more likely to endorse exclusionary practices. Further, perceived threat was associated with lower education and income, and blue-collar job status (Semyonov et al., 2004). Contemporary research suggests that exposure to increasing diversity induces implicit and explicit racial biases in white Americans, including the expression of negative attitudes (Craig & Richeson, 2014a), and

increases white Americans' endorsement of conservative policies, regardless of prior political affiliation (Craig & Richeson, 2014b). Further, similar trends were seen in non-Hispanic minorities confronted with increasing diversity driven primarily by a growth in the Hispanic population (Craig & Richeson, in press). These perceptions of threat can impact all citizens, but they may play an important role in understanding improper shootings by police officers.

Importantly, police and others may be aware of their biases, and may fear being prejudiced (for a review, see Pearson, Dovidio, & Gaertner, 2009). Although counterintuitive, concern over appearing prejudiced is associated with increased stress when individuals encounter out-group members. In one study, researchers found that Caucasian Americans who are concerned with appearing prejudiced experience increases in cortisol and anxiety when interacting with out-group members, and those who are highly externally motivated not to be prejudiced experienced an increase in stress and anxiety over time and show indications of chronic stress (Trawalter, Adam, Chase-Lansdale, & Richeson, 2012). However, individuals who are internally motivated not to be prejudiced did not show the same pattern, and contact with diverse others reduced their anxiety over time (Trawalter et al., 2012). This line of research is important to note as police officers, for many reasons, may be externally motivated not be prejudiced. They are constantly in the public eye and may be keenly aware of citizens' perceptions of their behavior and judgments, which may exacerbate their perceptions of threat regarding minorities.

Additionally, situational and social influences can intensify racial tensions. Richeson and Ambady (2003) found that when Caucasian females are assigned the

role of a superior to an African American, their scores on a race Implicit-Association Test (IAT) were higher than when they were assigned as a subordinate to an African American. However, there was no difference when Caucasians were assigned either role in relationship to another Caucasian (Richeson & Ambady, 2003). Similarly, other research suggests that participants' scores on a race IAT were lower when the administering experimenter was African American compared to Caucasian, and also when African American experimenters instructed participants not to be prejudiced (Lowery, Hardin, & Sinclair, 2001). In situations involving police officers and civilians, there is always an imbalance of power. These studies suggest that implicit racial biases may be exacerbated by this power differential when Caucasian officers encounter minorities, and that Caucasian civilians might show deference to African American police officers as they may exhibit less racial bias after encountering an African American in power.

Relatedly, Judd, Blair, and Chapleau (2004) explored individuals' associations between ethnicities and various objects. They found that African American faces were more closely associated with handguns and sports objects than Caucasian faces. Similarly, Payne found that participants are more likely to mistake tools as guns following the presentation of African American faces compared to Caucasian faces (2001, 2005) and more likely to pair "bad" with African Americans and "good" with Caucasian Americans (2005). Further, Payne (2001) found that Caucasians were also faster at identifying guns following the presentation of an African American face. Importantly, Payne (2005) discovered that these biases were worse when participants had low cognitive control, and although individuals with high and low control were

equally biased, those with high executive control were less likely to express their biases in behaviors and judgments.

Social psychological research has begun to examine the impact of implicit racial biases on shooting decisions involving minority suspects. Several groups of researchers have found that participants who simulate shooting decisions "correctly" fire at armed black men more quickly than armed white men (e.g., Correll, Park, Judd, & Wittenbrink, 2002; Correll, Urland, & Ito, 2006; Greenwald, Oakes, & Hoffman, 2003), decide correctly *not* to shoot unarmed white men more quickly than unarmed black men (e.g., Correll et al., 2002, 2006), mistakenly shoot unarmed black suspects more than unarmed white suspects (e.g., Correll et al., 2002, 2006; Greenwald et al., 2003), and incorrectly fail to shoot armed white men more than armed black men (e.g., Correll et al., 2002, 2006). This research suggests that participants have a lower decision criterion for shooting African Americans versus Caucasians (Correll et al., 2002), and that race impacts perceptual abilities such that individuals have trouble distinguishing weapons from non-weapons when suspects are African American (Greenwald et al., 2003).

Much research suggests the strength of ones' biases and negative stereotypes of minorities impacts shooting decisions (e.g., Sadler, Correll, Park, & Judd, 2012) and shooting decision reaction times (e.g., Correll, Park, Judd, Wittenbrink, Sadler, & Keesee, 2007). Correll and colleagues found that shooter bias was more pronounced in individuals with strong negative stereotypes about African Americans and who perceive these individuals as aggressive and violent (Correll et al., 2002, 2006), and in those who have had *more* contact with African Americans (Correll et al., 2002).

Generally, sensitivity to race predicts the strength of the shooter bias, with ones' perceptions of cultural stereotypes leading to increased sensitivity to race, which in turn predicts shooter bias (Correll et al., 2006). Overall, Correll and colleagues argue that response inhibition is the key to such decisions: Many individuals experience implicit bias, but those who feel threatened and are unable to inhibit the improper response are those who are more likely to exhibit greater shooter bias (Correll et al., 2006).

Other research comparing shooting decisions amongst officers and community members indicates that, although both samples are racially biased, police officers make more accurate shooting decisions than civilians (Correll et al., 2007). In this work, officers were faster than civilians in their decisions to shoot, and officers were better able to differentiate amongst armed and unarmed suspects compared to community members. Still, both samples were slower when making decisions about unarmed black suspects and armed white suspects. In officers, bias scores were positively related to city and county population size, amount of violent crime in the community served, and percentage of minority members within the community. Importantly, in one sample of officers, bias scores were negatively related to years on the force. Thus, years of training may decrease the effects of racial biases in officers.

In work exploring racial biases and perceptions of time, Moskowitz, Okten, and Gooch (2015) found that, for some whites, perception of time slows when viewing black men. When whites are concerned about perceptions of racial bias, they perceive that they view a black face longer than they do in reality. Thus, those who are highly externally motivated to control prejudice, which some police officers may be, are

actually susceptible to perceptual inaccuracies, which may make shooting decisions even more challenging. If, for example, an officer perceives that they have waited an appropriate amount of time before making a shooting decision, they may in fact inaccurately perceive how much time has passed when viewing a minority suspect. In turn, they may be too quick to the trigger.

**Mixed Results**

It should be noted that several studies have cast doubts about the IAT's predictive validity (e.g., Blanton, Jaccard, Klick, Mellers, Mitchell, & Tetlock, 2009) and temporal stability (Gawronski, Morrison, Phills, & Galdi, 2017), and debates regarding these issues have been widespread (e.g., Goldhill, 2017; Payne, Niemi, & Doris, 2018). Further, some research specifically exploring the impact of implicit racial biases (as measured by the IAT) on simulated police shooting decisions found no relationship between IAT scores and shooting decisions (James, James, & Vila, 2016). Thus, a growing body of research suggests caution should be used when considering the use of the IAT for diagnostic or intervention/training purposes (e.g., Vorauer, 2012). However, much research utilizing various other measures of implicit bias show clear patterns, suggesting that individuals' perceptions are in fact impacted by implicit racial biases (e.g., Eberhardt, Goff, Purdie, & Davies, 2004). Proponents of the IAT argue that it was never intended to predict individuals' behaviors, but rather, to predict average outcomes across larger groups (Payne et al., 2018).

In addition to the debates surrounding the predictive validity and reliability of the IAT, research examining the impact of implicit racial biases on shooting decisions has produced mixed results. For instance, as mentioned above, James and colleagues

(2016) found evidence in a laboratory study that, although police officers were in fact implicitly racist (as measured by the "race/weapons" version of the IAT), officers were slower to make shooting decisions regarding African American suspects compared to European American suspects, and were less likely to shoot unarmed African American suspects compared to European American suspects. Further, utilizing data from actual police use of force, Fryer (2018) found that, although non-lethal use of force was substantially higher for minority suspects compared to European American suspects, police showed no racial disparities in officer-involved shootings. In contrast, Nix, Campbell, Byers, and Alpert (2016), found that 15% of African Americans shot and killed were unarmed compared to 6% of European Americans who were unarmed at the time of their death. Further, Nix and colleagues found that a large percentage of African Americans killed by police in 2015 (24%) were not attacking police officers or others when they were shot, due to what the authors describe as "threat perception failure" (p 17).

Summarizing the disparities across these studies, Fridell (2016) argues that discrepancies among the data in these studies are the result of differences in operationalizations of key variables, geographic differences in where data were collected, and the selection of police-use-of-force incidents selected. For instance, Fridell (2016) discusses Fryer's study (2018) and characterizes his random sample of incidents involving arrests as "problematic" (p 507), as several are likely to involve police use of force (e.g., "attempted capital murder of a public safety officer"), while others are significantly less likely to instigate police use of force (e.g., evading arrest). Further, Fridell (2016) argues that the data utilized in the above studies vary

considerably by jurisdiction, with some studies showing evidence of bias in police (e.g., those using data from New York City), while others show little to no evidence of bias in shooting decisions (e.g., those using data from Houston). Regarding these inconsistencies in data across geographic locations, Fridell argues "This raises concerns about the veracity of conclusions drawn from national data" (p 509). Lastly, Fridell (2016) argues that several of the above studies do not account for the level of resistance officers faced in these encounters, which has been shown to be a powerful predictor of use of force. While keeping in mind the differences in results amongst these studies, the question remains: What, if anything, might help mitigate racial biases and improve police officer decision making?

## Purpose in Life

Purpose in life is a "central, self-organizing life aim" which provides meaning (McKnight & Kashdan, 2009, p. 242). Purpose allows individuals to situate themselves in broader social contexts (Bronk, 2011) and to imagine their ideal future selves. Further, purpose is related to many positive outcomes, including the inhibition of impulsivity (Burrow & Spreng, 2016), increased life satisfaction across the lifespan (Bronk, Hill, Lapsley, Talib, & Finch, 2009), and the promotion of greater consistency of the self across time (Burrow, Sumner, & Ong, 2014b).

While dispositional purpose in life has many positive correlates, it is important to note that such outcomes can be achieved through purpose interventions as well. For instance, in one study researchers asked individuals to write about their sense of purpose in life and found that these individuals, compared to those who wrote about a control topic, were more comfortable when confronting diversity (Burrow, Stanley,

Sumner, & Hill, 2014a). Further, writing about one's sense of purpose has also been shown to decrease antisocial behaviors in impoverished adolescents (Machell, Disabato, & Kashdan, 2016) and to increase confidence in mock legal investigators (Burd, Burrow, Torrie, & Nam, 2016a).

## Self-affirmation

Individuals may experience a host of threats, ranging from threats to their identity (e.g., Frantz, Cuddy, Burnett, Ray, & Hart, 2004), stress relating to identity threat and academics (e.g., G. L. Cohen, Garcia, Apfel, & Master, 2006) or in response to stressful social experiences (e.g., Fogelman & Canli, 2015). In the face of these threats**,** individuals seek to maintain a positive self-concept and are motivated to protect their sense of self-worth and integrity (e.g., Sherman & Cohen, 2006; Steele, 1988). Individuals may respond directly or indirectly, and sometimes in a defensive, unproductive manner (Sherman & Cohen, 2006). However, self-affirmation can help individuals cope with such threats. Evidence shows that affirming the self in a context unrelated to the threat reminds people of who they are (Sherman & Cohen, 2006) by drawing on alternative resources of self-worth (Cohen, Aronson, & Steele, 2000; Sherman & Cohen, 2002). Thus, self-affirmation is implicated in many positive outcomes. For instance, self-affirmation interventions can help reduce individuals' implicit racial biases: One study suggests that self-affirmation leads to lower race IAT scores (Frantz, Cuddy, Burnett, Ray, & Hart, 2004). Further, research suggests that morality salience (an increased awareness of one's own mortality) can also be reduced through self-affirmation (Schmeichel & Martens, 2005). This research may have important implications for legal decision makers and actors. Police officers may

experience mortality salience in their daily lives, and this may reduce their acceptance of out-group members; however, self-affirmation may mitigate these effects.

### Purpose in Life and Self-affirmation: Protection from Threat

Given that purpose in life and self-affirmation can help reduce individuals' reactions to and promote recovery from stressful (e.g., Fogelman & Canli, 2015; Schaefer et al., 2013) or threatening events, and can even prevent perceptions of stress (D. K. Sherman, Bunyan, Creswell, & Jaremka, 2009), both might serve as helpful interventions to law enforcement officers by mitigating racial biases, which may relate to shooting decisions. Purpose helps buffer against negative affect during times of uncertainty, discomfort, or change (e.g., Burrow et al., 2014a), and is generally related to increased well-being (e.g., Burrow et al., 2014b). Self-affirmation increases individuals' perceptions of their self resources, which in turn is associated with lower stress appraisal (Creswell, Welch, Taylor, D. K. Sherman, Gruenewald, & Mann, 2005). Further, self-affirmation can facilitate self-regulation (Loseman & van den Bos, 2012) and promote self-control when one is cognitively depleted (Schmeichel & Vohs, 2009). Taken together, purpose in life and self-affirmation may reduce officers' perceptions of threat, which in turn, may increase shooting decision accuracy.

### Study Overview

Given the many positive effects of purpose in life and self-affirmation, police decision accuracy may be improved through targeted interventions of these constructs. Both purpose in life and self-affirmation may reduce officers' perceptions of threat related to implicit racial biases, which in turn may increase their decision accuracy during ambiguous situations. The aim of the current study was to explore the impact of

purpose in life and self-affirmation writing interventions on shooting decision accuracy and decision reaction time in a first-person shooting video game task, wherein participants were asked to make active decisions to shoot or not to shoot target photos containing European and African American "suspects" holding either weapons or harmless objects. Participants were tasked with "shooting" armed suspects and choosing not to shoot unarmed suspects.

A secondary aim was to explore any differences that might exist in the efficacy of purpose in life and self-affirmation writing interventions. While the purpose in life and self-affirmation literature suggests that both confer many positive benefits in those who cultivate them, less is known about where and for whom these benefits might be the greatest (see Burd & Burrow, 2017).

Research suggests that self-affirmation lowers stress appraisal (Creswell et al., 2005), promotes self-regulation (Loseman & van den Bos, 2012) and self-control (Schmeichel & Vohs, 2009), and reduces implicit racial biases (Frantz et al., 2004), while purpose in life is associated with faster recovery from stressful situations (e.g., Fogelman & Canli, 2015; Schaefer et al., 2013). Thus, it was hypothesized that self-affirmation might significantly reduce shooting decision inaccuracies compared to a purpose writing intervention or a control task. However, research also suggests that purpose in life may increase one's comfort with diversity and reduce negative affect (Burrow et al., 2014a), which in turn may also promote decision accuracy, although perhaps not as strongly as self-affirmation interventions. It was also posited that purpose in life would protect individuals from the negative affect they may experience after making such shooting decisions. Lastly, it was hypothesized that participants in

the purpose in life writing condition might respond more slowly than those in the other conditions based on research suggesting that purposeful individuals choose to gather more evidence than those with lower levels of purpose, which in turn might slow reaction time (Burd et al., 2016a).

## Methods

### Participants

Ninety-six adults (*Mage* = 20.63, *SD* = 2.57, *Range*: 18-35) participated in the experiment in exchange for course credit or without compensation. A computer error occurred and data from one participant was lost. The sample was nearly balanced in gender (51.6% Female, 48.4% Male), yet racially diverse (50.5% European American, 25.3% Asian / Pacific Islander, 8.4 % African American, 8.4% Hispanic, 7.4% other).

### Manipulations

Participants were randomly assigned to one of three experimental conditions (Purpose in Life vs. Self-Affirmation vs. Control). Participants in the Purpose in Life intervention condition were asked to write for ten minutes about their sense of purpose in life in response to the following prime:

> *Please take ten minutes to think about your sense of purpose in life. Really reflect on the idea of purpose. When you are ready, please describe your sense of purpose (e.g., What is your purpose and where did it come from?).*
>
> *If you do not have a sense of purpose, or are unsure about what it might be, please take a few minutes to consider the idea of purpose in life and what it would mean for you to have a purpose. Really reflect on what it would mean in your life. When you are ready, describe as best as you can what you think it would mean to you.*

Participants in the Self-Affirmation intervention condition first ranked six values in order of personal importance (business, art/music/theater, social life/relationships, science/pursuit of knowledge, religion/morality, and government/politics; e.g., Steele & Liu, 1983), with one being the most personally important value. Next, participants wrote for ten minutes about why their selected value is important to them using the following prime:

> "*Please write for ten minutes about your **most** important value from above. Why is this value most important to you? Why is this value so meaningful?"*

Participants in the Control condition completed the same values ranking task as in the Self-Affirmation condition, but instead wrote about their least important value in response to the following prime:

> *"Please write for ten minutes about your **least** important value from above. Why might this value be important to others? Why is this value so meaningful to others?"*

**Measures**

**Shooting decision accuracy and reaction time.** Shooting accuracy was operationalized as the ratio of correct decisions to incorrect decisions. A correct decision was made when participants chose *not* to shoot unarmed suspects and chose to shoot armed suspects. Participants' reaction times were recorded for each shooting trial.

**Individual difference measures.** In the current study, several individual differences were measured to explore possible moderators between individuals' moral leanings, Purpose in Life, and implicit racial biases on shooting decisions and shooting decision reaction times.

***Moral Foundations Questionnaire***. Participants completed the Moral Foundations Questionnaire (MFQ-30), which measures individual's reliance on five moral foundations (Graham, Haidt, & Nosek, 2008). Research indicates that moral leanings, as measured by this questionnaire, relate to legal decision making in many contexts (e.g., Burd, 2015; Burd et al., 2016a; Burd, Ceci, & Salerno, 2016b).

***Purpose in Life Subscale of the Psychological Wellbeing***. This subscale measures "a belief that one's life is purposeful and meaningful" (Ryff & Keyes, 1995, p720). Sample items include *"I enjoy making plans for the future and working to make them a reality,*" and "*My daily activities often seem trivial and unimportant to me,"* (reverse-coded), with higher numbers indicating more purpose in life.

***Measures of implicit racial bias and motivation to not be prejudiced***. Participants completed the Internal and External Motivations to Respond without Prejudice Scales (IMS/EMS) (Plant & Devine, 1998). The IMS measures an individual's internal motivation to respond without prejudice based on "self-imposed nonprejudiced standards," while the EMS measures an individual's external motivations to respond without prejudice based on "standards imposed on one by significant others" (Plant & Devine, 1998, p 813).

Additionally, participants responded to the Color-Blind Racial Attitudes Scale (CoBRAS) (Neville, Lilly, Duran, Lee, & Browne, 2000). The CoBRAS is a 20-item scale measuring individuals' beliefs that "race should not and does not matter" (Neville et al., 2000, p 60). Individuals with higher scores deny that racism has structural components and that racism creates advantages for whites and disadvantages minorities. Sample items include "*Racial problems in the U.S. are rare, isolated*

*situations*" and "*White people in the U.S. have certain advantages because of the color of their skin*" (reverse-coded).

***Affect.*** Participants completed an affect questionnaire containing several items from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Participants were asked to indicate how they felt, *right now*, using a scale ranging from 1 (Very slightly to not at all) to 5 (Extremely) for a large variety of emotions (e.g., anger, anxiety, calm, disgust, surprised, upset).

***Demographic questionnaire.*** Participants responded to several demographic questions including age, sex, ethnicity, education, and political orientation.

**Procedure**

Twenty participants (20.83%) completed the experiment across two experimental sessions. These individuals completed several individual difference measures at Time I (IMS/EMS, CoBRAS), and then completed the first-person shooter video game and other dependent measures at Time II. For these individuals, participation in the second portion of the experiment occurred on average 11.15 days after the first portion. Changes were made to the structure of the experimental sessions in order to increase the likelihood that participants would complete all portions of the experiment. Thus, all other participants (n = 76; 79.17% of total sample) completed all components of the experiment in one experimental session. These individuals first completed several individual difference measures (IMS/EMS, CoBRAS).

*Sample stimuli* (Correll et al., 2002)

Participants were presented with a simple first-person shooter video game that randomly presented images of suspects (European American or African American men) holding either of two weapons (two different guns) or a harmless object (e.g., wallet, cellphone) against various backgrounds (e.g., a mall, a street, a park) (Correll et al., 2002). Participants were instructed to shoot at armed suspects and not to shoot at unarmed suspects as quickly as possible. Participants were told that they earned points for correct decisions and lost points for incorrect decisions, and that the game timed out in order to incentivize quick decisions (see Correll et al., 2002). In total, participants completed 16 practice and 100 actual trials of the video game. After completing all trials, participants completed the above individual difference measures for a second time, and additionally answered an affect questionnaire.

## Results

### Shooting Decision Accuracy

A Mixed Factor MANOVA was performed to investigate the impact of writing condition, suspect race, and whether suspects were armed on shooting decision accuracy, with Subject ID entered as a random factor. Participant responses were coded 1 for accurate if they chose to shoot armed suspects and chose not to shoot unarmed suspects, while all incorrect responses were coded 0.

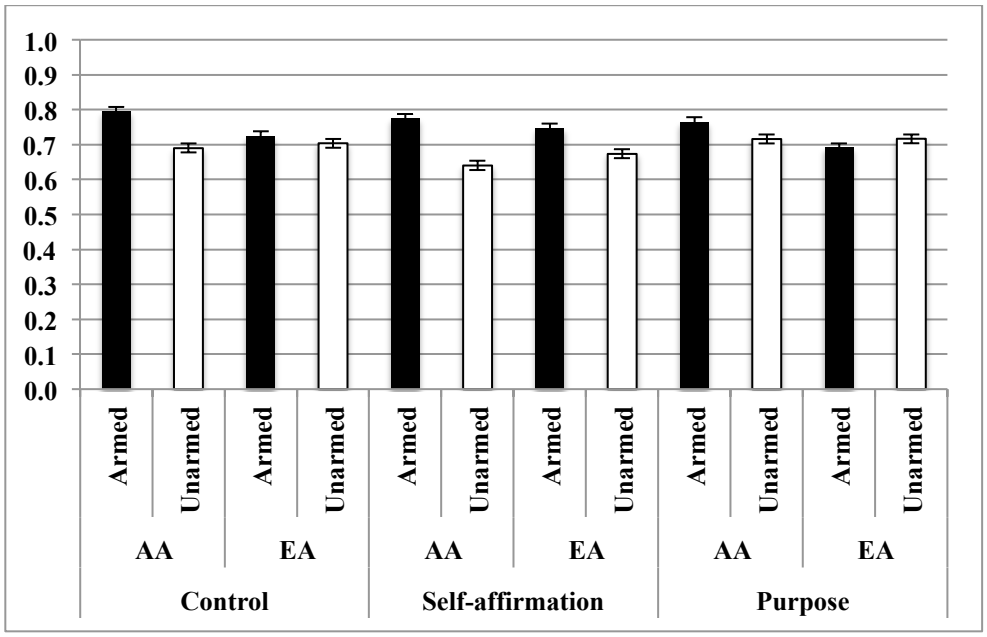



*Figure 1.* Mean accuracy for shooting decisions. Error bars represent standard errors.

Writing condition did not significantly predict shooting decision accuracy, $F$ (2, 92) = .25, $p$ = .78. However, analyses revealed main effects of suspect race ($F$ (1, 276) = 4.17, $p$ = .04) and whether or not suspects were armed, $F$ (1, 276) = 34.79, $p$ < .001. Participants were significantly more likely to make accurate decisions for African American ($M$ = .73, $SE$ = .01) compared to European American ($M$ = .71, $SE$ = .01, $p$ = .04) suspects, and for armed ($M$ = .75, $SE$ = .01) versus unarmed ($M$ = .69, $SE$ = .01, $p$ < .001) suspects. No significant interaction was found to exist between writing condition and suspect race ($F$ (2, 276) = 1.41, $p$ = .25), and no evidence was found for a three-way interaction between writing condition, suspect race, or whether the suspect was armed, $F$ (2, 276) = .13, $p$ = .88.

However, significant interactions were discovered between whether or not suspects were armed and writing condition, $F$ (2, 276) = 6.90, $p$ = .001. A series of

independent samples t-tests indicated that participants were significantly more accurate in their decisions when suspects were armed ($M$ = .76, $SD$ = .13) versus unarmed ($M$ = .70, $SD$ = .12) in the control condition, $t$ (126) = 2.83, $p$ = .005. Further, participants were more accurate in the self-affirmation condition when suspects were armed ($M$ = .76, $SD$ = .11) versus unarmed, $M$ = .66, $SD$ = .16, $t$ (122) = 4.16, $p$ < .001). However, participants in the purpose condition did not differ in terms of accuracy for armed ($M$ = .73, $SD$ = .19) versus unarmed suspects, $M$ = .72, $SD$ = .12, $t$ (126) = .42, $p$ = .67.

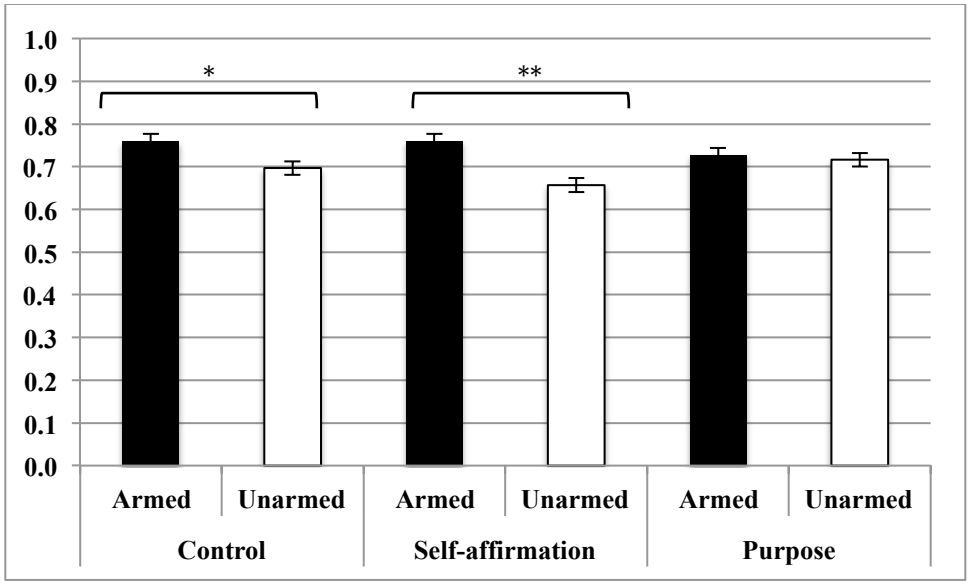



*Figure 2.* Mean accuracy for shooting decisions. Error bars represent standard errors. *$p$ < .01, **$p$ < .001

A significant interaction between whether or not suspects were armed and suspect race was also discovered, $F$ (1, 276) = 13.15, $p$ < .001. Analyses further revealed that participants were significantly less accurate for decisions regarding unarmed ($M$ = .68, $SD$ = .14) versus armed ($M$ = .78, $SD$ = .14) African American suspects ($t$ (188) = 4.77, $p$ < .001), while participants did not significantly differ in

terms of decision accuracy for unarmed ($M$ = .70, $SD$ = .14) versus armed ($M$ = .72, $SD$ = .15) European American suspects, $t$ (188) = 1.07, $p$ = .29.

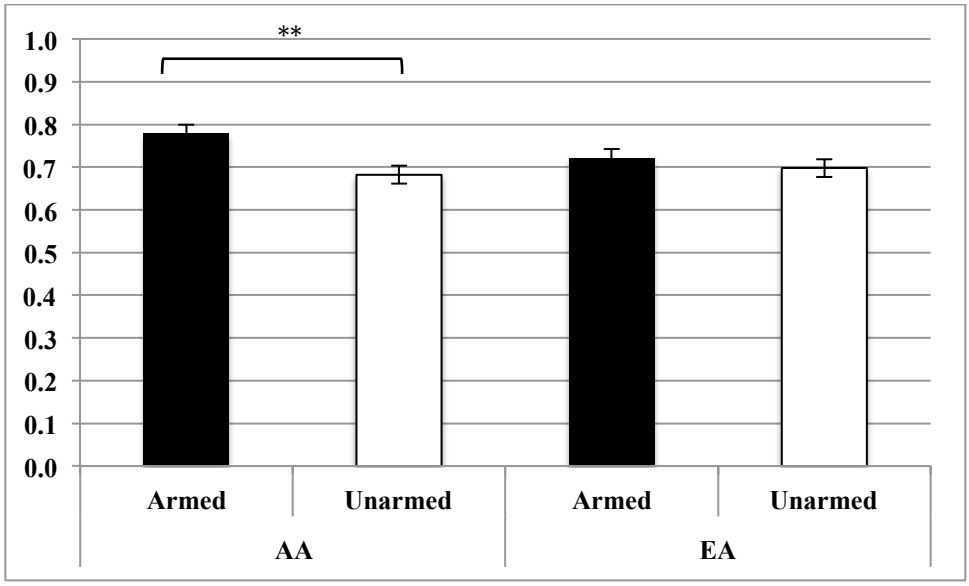



*Figure 3.* Mean accuracy for shooting decisions. Error bars represent standard errors. **$p$ < .001

**Shooting Decision Response Time**

In order to explore the impact of writing condition, suspect race, and whether or not the suspect was armed on participants' shooting reaction time, a series of Mixed Factor MANOVAs were performed with Subject ID entered as a random factor.

**Reaction times for all trials.** When looking at participant reaction time for all shooting decisions, including inaccuracies, analyses revealed no main effect of writing condition ($F$ (2, 92) = 1.17, $p$ = .32) or suspect race, $F$ (1, 276) = 1.47, $p$ = .23. However, results suggest a main effect of whether the suspect was armed or unarmed ($F$ (1, 276) = 440.94, $p$ < .001), such that decisions regarding armed suspects were made significantly faster ($M$ = 522.28 ms, $SE$ = 4.18 ms) compared to unarmed suspects ($M$ = 576.59 ms, $SE$ = 4.18 ms). Analyses also revealed a marginally

significant interaction between writing condition and suspect race ($F$ (2, 276) = 2.99, $p$ = .05), but no significant differences were found for either African American ($p$ = .21) or European American ($p$ = .19) suspects.

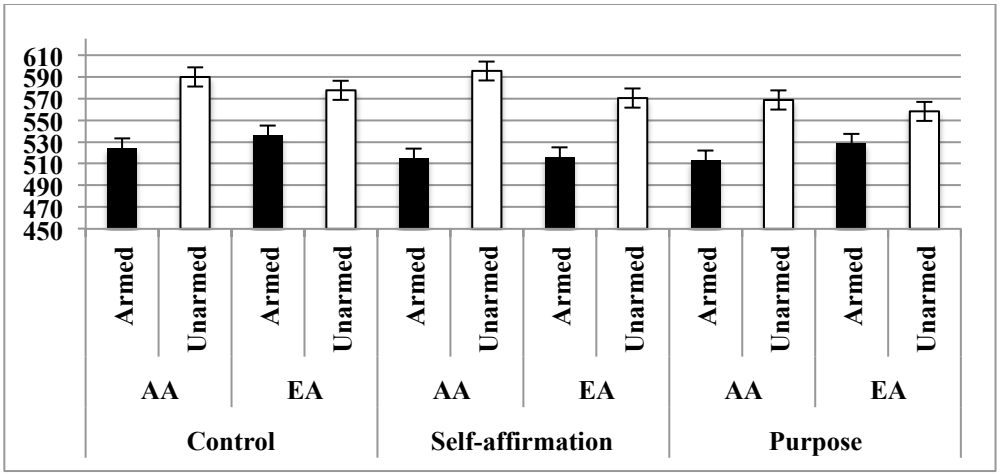



*Figure 4.* Mean response time in milliseconds for all shooting decisions, including time-outs and incorrect decisions. Error bars represent standard errors.

A significant interaction between writing condition and whether or not the suspect was armed was found, $F$ (2, 276) = 7.85, $p$ < .001. Further analyses suggest no difference in reaction time for armed suspects ($p$ = .16), but indicated that, for unarmed suspects, reaction times were significantly faster for participants in the purpose condition ($M$ = 563.34 ms, $SD$ = 42.77) compared to those in both the control ($M$ = 583.60 ms, $SD$ = 40.90, $p$ = .03) and self-affirmation conditions, $M$ = 582.83 ms, $SD$ = 51.92, $p$ = .04.

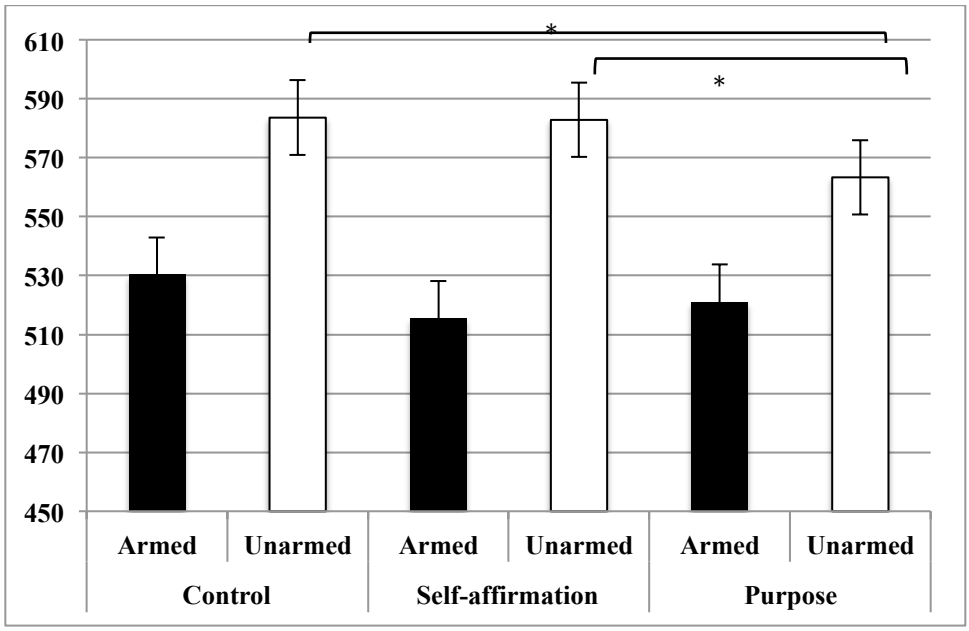



*Figure 5.* Mean response time in milliseconds for all shooting decisions, including time-outs and incorrect decisions. Error bars represent standard errors. *$p < .05$

Further, analyses revealed a significant interaction between suspect race and whether the suspect was armed, $F$ (1, 276) = 24.33, $p < .001$. While no significant differences were found for armed suspects ($p = .13$), reaction times were significantly faster for unarmed European American suspects ($M$ = 568.63 ms, $SD$ = 43.34) compared to unarmed African American Suspects ($M$ = 584.42 ms, $SD$ = 47.65, $t$ (188) = 2.39, $p = .02$). Lastly, no significant 3-way interaction was discovered between writing condition, suspect race, and whether or not the suspect was armed, $F$ (2, 276) = .01, $p = .99$.

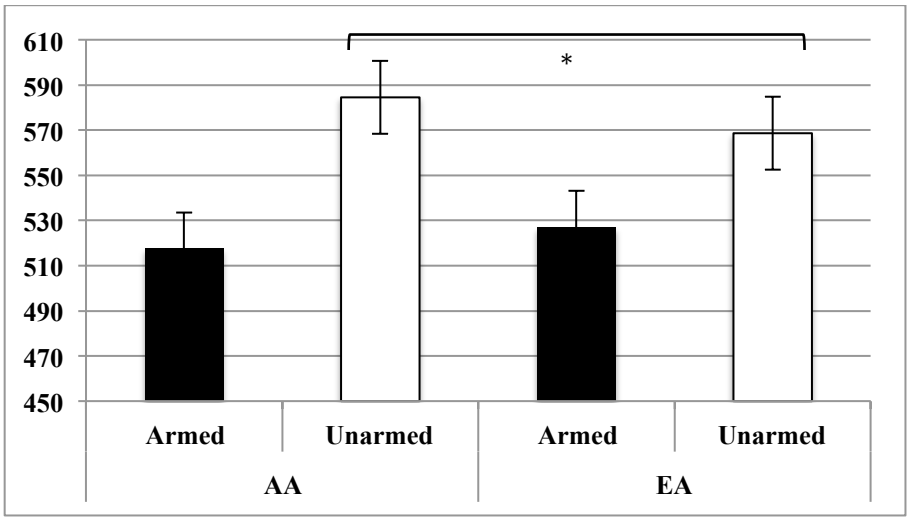



*Figure 6.* Mean response time in milliseconds for all shooting decisions, including time-outs and incorrect decisions. Error bars represent standard errors. *$p < .05$

**Reaction times for accurate trials.** When looking at participant reaction time specifically for accurate decisions, analyses revealed a marginal main effect of writing condition, $F$ (2, 90.62) = 3.09, $p$ = .05. Participants in the purpose writing condition made decisions significantly faster ($M$ = 501.08 ms, $SE$ = 3.91 ms) than those in the control condition ($M$ = 514.77 ms, $SE$ = 3.91 ms, $p$ = .05), while no differences were found for those in the control versus self-affirmation ($p$ = .47), or self-affirmation versus purpose ($p$ = .92). Reaction time was not significantly predicted by suspect race, $F$ (1, 7836.91) = 3.15, $p$ = .08.

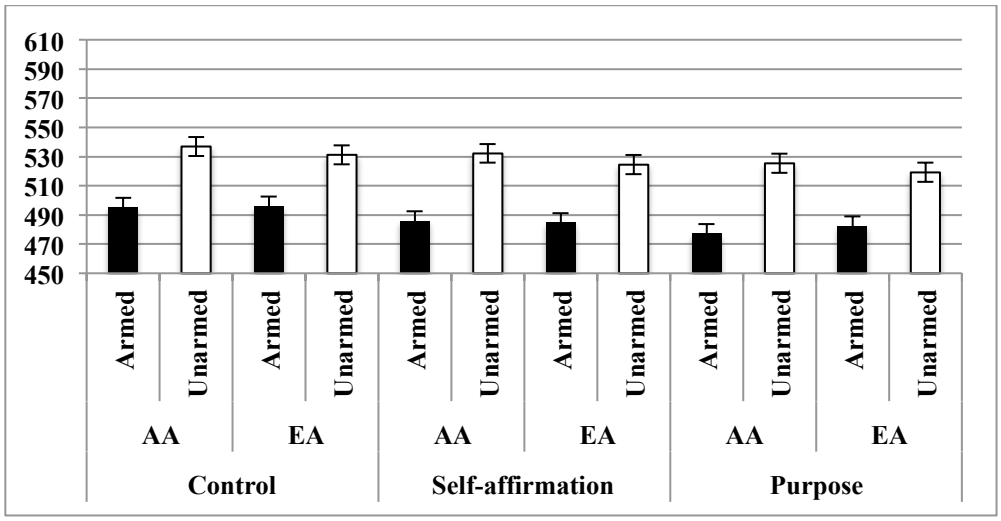



*Figure 7.* Mean response time in milliseconds for accurate shooting decisions. Error bars represent standard errors.

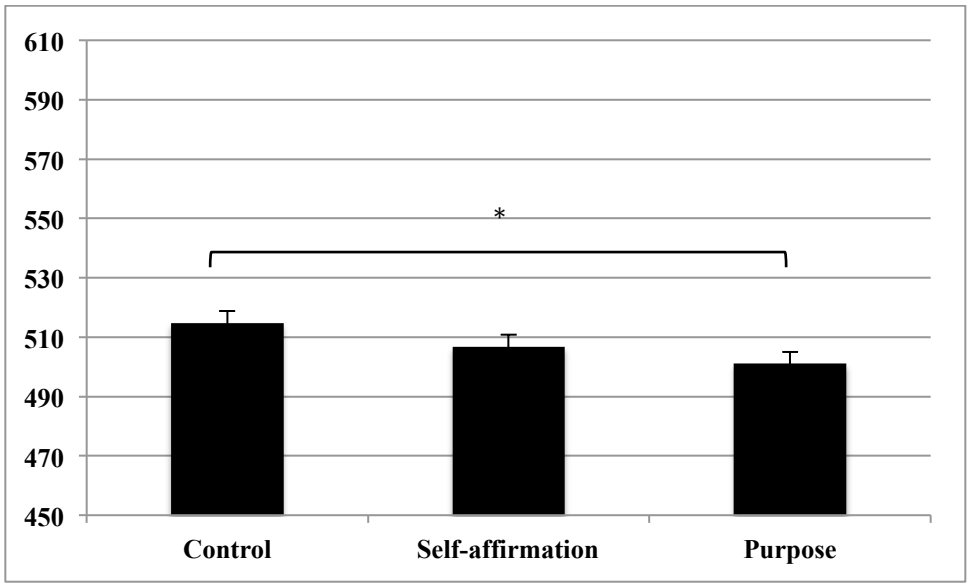



*Figure 8.* Mean response time in milliseconds for accurate shooting decisions. Error bars represent standard errors. *$p$ = .05

However, reaction time significantly varied by whether the suspect was armed or unarmed ($F$ (1, 7858.65) = 866.70, $p$ < .001), such that decisions regarding armed suspects were made significantly faster ($M$ = 486.92 ms, $SE$ = 2.37 ms) compared to unarmed suspects, $M$ = 528.19 ms, $SE$ = 2.38 ms, $p$ < .001. No significant interaction

was found between writing condition and suspect race ($F$ (2, 7836.92) = .70, $p$ = .50), or writing condition and whether suspects were armed, $F$ (2, 7858.3) = .97, $p$ = .38.

Analyses revealed a significant interaction between suspect race and whether suspects were armed, $F$ (1, 7837.61) = 8.51, $p$ = .004. While no significant differences were found for armed African American suspects ($M$ = 486.32 ms, $SD$ = 68.06 ms) versus armed European American suspects ($M$ = 488.05 ms, $SD$ = 67.53 ms, $t$ (4124) = -.82, $p$ = .41), reaction times were significantly faster for unarmed European American suspects ($M$ = 524.29 ms, $SD$ = 63.91) compared to unarmed African American suspects, $M$ = 530.62 ms, $SD$ = 60.83, $t$ (3809) = 3.13, $p$ = .002. Lastly, no significant three-way interaction was discovered between writing condition, suspect race, and whether or not the suspect was armed, $F$ (2, 7837.60) = .37, $p$ = .69.

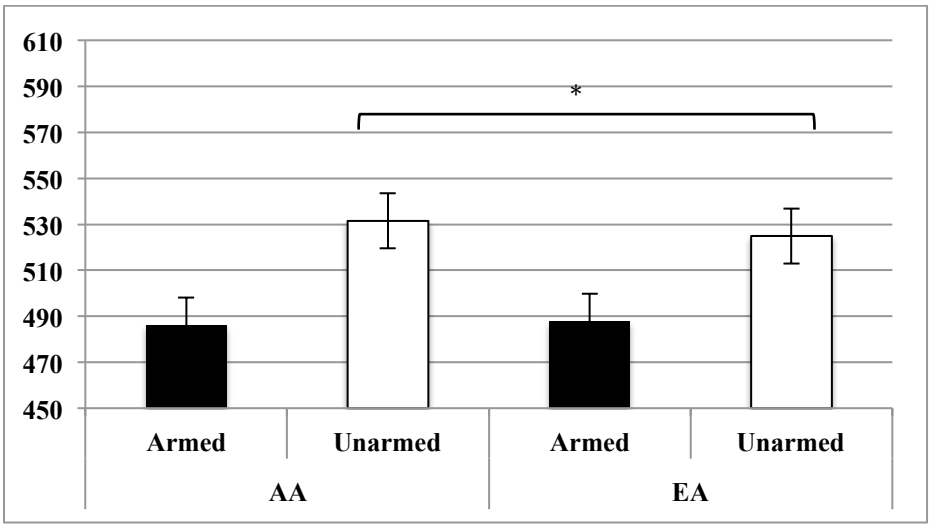



*Figure 9.* Mean response time in milliseconds for accurate shooting decisions. Error bars represent standard errors. *$p$ < .01

**Exploratory Analyses**

**Response decision.** Although participants typically made a shooting decision, in 13.7% of the shooting video game trials, no decision was made. A series of analyses

were conducted to explore the factors impacting participants' shooting responses and non-responses. Chi-square analyses revealed that participants' likelihood of making a decision did not vary by suspect race ($\chi^2 = 1.59$, $p = .21$), or by writing condition, $\chi^2 = 1.77$, $p = .41$. However, participants' likelihood of responding was impacted by whether or not the suspect was armed, $\chi^2 = 120.45$, $p < .001$.

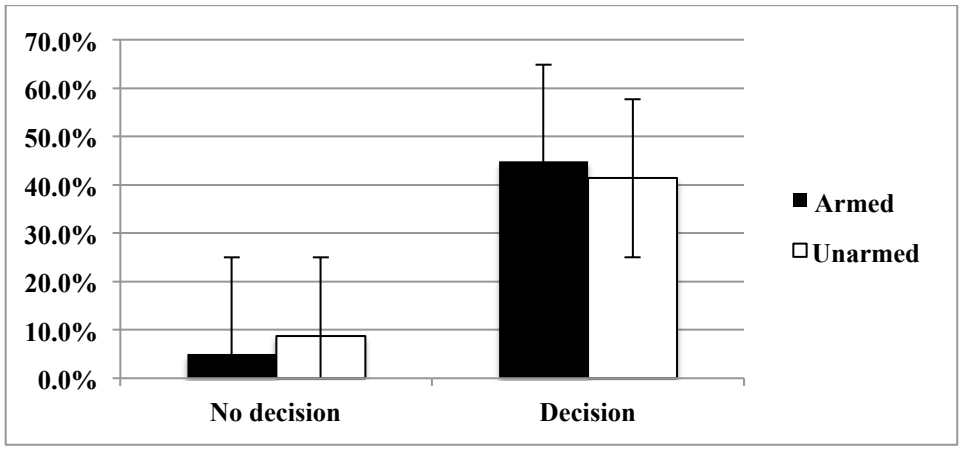



*Figure 10.* Mean decision. Error bars represent standard errors.

First, all non-responses were coded 0 while responses were coded 1. Then, an average was created for each individual. A Mixed Factor MANOVA was performed with Subject ID entered as a random factor. Analyses revealed no main effect of writing condition ($F$ (2, 92) = .17, $p = .85$) or race, $F$ (1, 276) = 1.30, $p = .26$. A main effect was found for whether suspects were armed ($F$ (1, 276) = 108.18, $p < .001$), which indicated that participants were significantly less likely to respond when suspects were unarmed ($M = .83$, $SE = .01$) compared to armed, $M = .90$, $SE = .01$, $p < .001$.

No interaction was indicated between writing condition and race, $F$ (2, 276) = 2.34, $p = 10$. However, analyses revealed a significant interaction between writing

condition and whether suspects were armed, $F$ (2, 276) = 9.42, $p < .001$. A series of independent samples t-tests indicated that participants were significantly more likely to respond when participants were armed ($M$ = .90, $SD$ = .08) versus unarmed ($M$ = .82, $SD$ = .10) in the control ($t$ (126) = 4.92, $p < .001$), and in the self-affirmation condition when suspects were armed ($M$ = .92, $SD$ = .05) versus unarmed, $M$ = .81, $SD$ = .11, $t$ (122) = 6.85, $p < .001$. However, participants in the purpose condition were no more or less likely to respond to armed ($M$ = .89, $SD$ = .12) or unarmed suspects, $M$ = .85, $SD$ = .09, $t$ (126) = 1.79, $p$ = .08.

Further, analyses revealed a significant interaction between suspect race and whether the suspect was armed, $F$ (1, 276) = 15.61, $p < .001$. While no significant differences were found for armed suspects ($p$ = .12), participants were significantly less likely to make a decision for unarmed African American suspects ($M$ = .81, $SD$ = .11) compared to unarmed European American suspects, $M$ = .84, $SD$ = .10, $t$ (188) = -2.41, $p$ = .02. Lastly, no significant 3-way interaction was discovered between writing condition, suspect race, and whether or not the suspect was armed, $F$ (2, 276) = .15, $p$ = .86.

**Linguistic analyses.** Exploratory analyses were conducted utilizing linguistic analyses software (Linguistic Inquiry and Word Count; Pennebaker, Booth, Boyd, & Francis, 2015) to investigate the content of participants' writing responses to the writing condition prompts (Control vs. Self-affirmation vs. Purpose). Exploring differences in participants' writing in response to these prompts may help uncover any differences or similarities in the impact of these two interventions on shooting decisions.

Table 1
*Means and Standard Deviations of Language Use by Condition*

| LIWC Dictionary Category | Control | Self-Affirmation | Purpose |
|---|---|---|---|
| Word Count | 220.18 (102.6) $_{a}$ | 218.13 (90.58) $_{a,b}$ | 149.34 (68.40) $_{c}$ |
| Clout | 43.95 (20.76) $_{a}$ | 47.63 (25.89) $_{b}$ | 32.17 (22.53) |
| Authentic | 47.73 (25.80) $_{a}$ | 62.86 (21.38) $_{b}$ | 70.08 (26.79) $_{b,c}$ |
| Social | 8.12 (3.36) $_{a}$ | 9.93 (4.48) $_{b}$ | 7.17 (2.85) |
| Cause | 3.27 (1.72) $_{a}$ | 3.29 (1.63) $_{a,b}$ | 4.67 (1.96) $_{c}$ |
| Drives | 8.29 (2.82) $_{a}$ | 11.29 (3.53) $_{b}$ | 10.95 (2.86) $_{b,c}$ |

*Note.* Standard deviations are in parentheses. Numbers within a row that do not share a subscript are significantly different from one another at $p < .05$.

Analyses revealed participants' responses were significantly shorter in the purpose compared to control and self-affirmation writing condition. Further, clout was significantly higher in the self-affirmation versus control conditions: Higher numbers in this category reflect high expertise and confidence in perspective. In addition, authenticity was higher in the self-affirmation and purpose conditions compared to control, with higher numbers reflecting more personal and honest responses. Words reflecting social processes (e.g., family, friends) were significantly higher in the self-affirmation compared to control condition. Causal references were higher in both the purpose and self-affirmation conditions compared to the control. Lastly, words referencing drives (e.g., affiliations, achievement, power) were significantly higher in the purpose and self-affirmation conditions compared to the control.

**Measures of implicit biases.** Exploratory analyses were conducted to investigate whether pre- and post-test measures of implicit racial biases significantly differed by writing intervention. However, pre- and post-test scores did not vary across time for Colorblind Racial Attitudes ($p = .61$), and there was no interaction between Colorblind Racial Attitudes and writing condition ($p = .60$). Further, internal

motivation not to be prejudiced did not vary across time ($p$ = .40), and there was no interaction between internal motivation not to be prejudiced and writing condition, $p$ = .99. Lastly, no evidence was found for a change in external motivation not to be prejudiced ($p$ = .52), and no indication of a significant interaction between external motivation not to be prejudiced and writing condition, $p$ = .12.

## Discussion

The current study investigated novel interventions aimed at reducing inaccurate shooting decisions. The current study provides some evidence to suggest that a purpose writing intervention might serve as an "equalizer" in terms of shooting decision accuracy, and that purpose might serve as a useful intervention to reduce shooting decision response times. Decision accuracy was greater for armed suspects compared to unarmed suspects in both the control and self-affirmation conditions. However, participants within the purpose writing condition were equally accurate for armed and unarmed suspects. Unfortunately, evidence was found suggesting that shooting decision accuracy was reduced for unarmed versus armed African American suspects. However, decision accuracy did not vary for armed or unarmed European American suspects. These findings are in line with other similar research finding that unarmed African American suspects are mistakenly shot more than unarmed European American suspects (e.g., Correll et al, 2002, 2006; Greenwald et al., 2003). In addition, research suggests police officers are more likely to use force against male minority suspects compared to other groups (Bolger, 2015).

In addition, the current study provides some evidence suggesting purpose in life writing interventions may reduce shooting decision reaction times. When

examining all shooting decisions (accurate and inaccurate), participants who wrote about their sense of purpose in life before engaging in the shooting task made significantly faster decisions for unarmed suspects compared to participants who engaged in a self-affirmation or control writing task. This result is somewhat surprising given literature examining the relationship between purpose in life and stress: Research in this area generally suggests that purpose in life speeds up one's recovery from stressful situations (e.g., Fogelman & Canli, 2015; Schaefer et al., 2013), but not one's reactivity to stressful situations (e.g., Fogelman & Canli, 2015).

Perhaps reaction to and recovery from the stress of engaging in these shooting paradigms is so brief that purpose promotes such fast recovery from the stressful stimuli and decision to shoot armed and unarmed suspects, that individuals prompted to consider their purpose in life actually experience a brief recovery from stress and thus are able to make faster, more accurate decisions compared to those who complete a self-affirmation or control writing task. Ishida and Okada (2006) found that purposeful individuals experienced less anxiety, psychiatric and somatic symptoms, and less sympathetic nervous system activation in response to anxiety and fear-provoking stimuli compared to less purposeful individuals. Further, purposeful individuals experienced greater parasympathetic nervous system activation in response to stressful stimuli compared to those with less purpose. These data suggest that purpose might buffer individuals' reactivity to and recovery from stressful situations.

Further examination of participants' reaction times for accurate shooting decisions suggests that purpose again serves as a resource during these trying times: Participants in the purpose writing conditions responded to targets accurately,

significantly faster than those in the control condition. While other research suggests that self-affirmation may buffer against the negative impact of stressors (e.g., D. K. Sherman et al., 2009), less research suggests that purpose reduces reactivity to stressors. However, some research suggests a powerful mitigating effect of purpose in life inductions in response to threat from diversity (e.g., Burrow et al., 2014a). Importantly, the current study replicated prior research finding that reaction times for accurate shooting decisions vary as a function of suspect race: Participants generally responded faster during shooting decisions regarding unarmed European American versus unarmed African American suspects (see Correll et al., 2002, 2006).

Examining shooting decisions another way, the current study provides evidence to suggest that individuals are generally more hesitant when suspects are unarmed versus armed. For instance, participants across all conditions were more likely to timeout on trials involving unarmed compared to armed suspects. However, the discrepancy between responses to armed and unarmed targets was considerable for those in the self-affirmation and control writing conditions, while no difference in responsiveness was found for those in the purpose writing conditions.

Related research suggests that "shooter bias" is less pronounced in individuals with high cognitive control (Payne, 2005), and Correll and colleagues (2006) argue that the key to reducing improper shootings, even amongst those with implicit or explicit racial biases, is response inhibition. In the current study, purpose may have won out over self-affirmation as an intervention because purpose has been implicated in reducing anxiety associated with thoughts of one's death (Routledge & Juhl, 2010), promoting positive reappraisal during times of stress (Hilton, 1989), and reducing

anxiety while promoting parasympathetic nervous system activation (Ishida & Okada, 2006). In one study exploring the relationship between mortality salience, purpose and meaning, and death anxiety (Routledge & Juhl, 2010), researchers found that individuals with lower levels of purpose experienced heightened anxiety about death following tasks where they were asked to imagine their own deaths: However, there was no significant effect of mortality salience on anxiety for purposeful individuals, and in fact, purposeful individuals experienced increased positive affect. Further, Hilton (1989) found that purposeful individuals were more likely to use positive reappraisal and less likely to use escape-avoidance strategies when dealing with stress related to cancer diagnoses.

In the current study, exploratory linguistic analyses did not prove fruitful. While some significant differences were found between the control, purpose in life, and self-affirmation writing conditions, most findings were not particularly enlightening. However, future research should delve further into this exploration utilizing hand coding or though the creation of a custom dictionary in LIWC. In addition, neither purpose in life nor the self-affirmation writing prompts produced changes in implicit racial biases across time. Future research should utilize additional measures of racial biases and cultural stereotypes.

**Limitations and Future Directions**

The current research, while promising, is not without limitations. For instance, the current experiment was underpowered: Power analyses suggest that a minimum of 126 individuals would be required to reliably detect differences amongst these writing interventions with an effect size of .2 or more and to fully explore all two-way

interactions within this model. However, 96 individuals completed all portions of the experimental paradigm (76.19% of the total required sample), and the data from one participant was lost (final sample = 75.40% of the total required sample).

In addition to low sample size, it cannot be determined if some hypotheses were not confirmed regarding the writing interventions because such effects are truly not present, or if the lack of findings is due to artifacts of the sample. Previous research suggests that police officers with four-year degrees are less likely to make improper shooting decisions than those without such education (McElvain & Kposowa, 2000). Further, "shooter bias" is dampened in samples that have lower levels, compared to higher levels, of negative cultural stereotypes regarding African Americans (Correll et al., 2002, 2006).

The current research is but an initial test of interventions aimed at reducing improper shooting decisions in police officers: Many factors contribute to police decisions to shoot, and the contexts of these decisions vary considerably. Other factors, including context ambiguity, must be explored. Future research should examine whether these interventions increase the processing of information during shooting decisions using eye-tracking technology.

In addition, future research should explore the duration of these effects. For instance, after priming an individual with purpose or affirmation, how long will improvements in these decisions? Further, how often must these interventions be used to maintain high levels of decision accuracy? Research should explore the strength and duration of these effects and could investigate whether such interventions have other

positive downstream effects (e.g., overall decreases in stress, improvement in self-esteem, etc.) that might have a recursive effect on police shooting decisions.

## Conclusions

The aim of the current line of research is to determine the feasibility of utilizing self-affirmation and sense of purpose interventions to increase accuracy in police shooting decisions. Importantly, this work illustrates that a purpose writing intervention might improve decision accuracy without sacrificing fast reaction times.

These findings have important implications for public policy and police officer training. Purpose interventions would be relatively low-cost to institute in police departments, which is an important consideration for communities as they try to determine how to best address issues surrounding improper shootings. Training for these departments would be minimal, which may increase the likelihood of departmental participation in such training endeavors.

Generally, there are noticeable gaps in our current knowledge surrounding self-affirmation and purpose in life, and how they might apply to legal decision making. We do not fully understand the mechanisms by which these constructs benefit us, or how they differ in terms of the processes by which they help us to reap such benefits. Such interventions are not always sufficient to impact human behavior (e.g., Vohs, Park, & Schmeichel, 2013). More research is needed to determine the link between one's intentions and their ability or willingness to act on such intentions. Overall, the current study provides initial promising evidence that purpose in life should be investigated as a possible intervention aimed at reducing improper shooting decisions.

REFERENCES

Blanton, H., Jaccard, J., Klick, J., Mellers, B., Mitchell, G., & Tetlock, P. E. (2009). Strong claims and weak evidence: Reassessing the predictive validity of the IAT. *Journal of Applied Psychology*, *94*(3), 567-582.

Bolger, P. C. (2015). Just following orders: A meta-analysis of the correlates of American police officer use of force decisions. *American Journal of Criminal Justice, 40*(3), 466-492.

Bronk, K. C. (2011). The role of purpose in life in healthy identity formation: A grounded model. *New Directions for Youth Development*, *2011*(132), 31–44.

Bronk, K. C., Hill, P. L., Lapsley, D. K., Talib, T. L., & Finch, H. (2009). Purpose, hope, and life satisfaction in three age groups. *The Journal of Positive Psychology*, *4*(6), 500–510.

Burch, J. & Cave, B. (2017). New partnership uses research and data to improve understanding of officer-involved shootings. *Translational Criminology, Spring,* 7-9.

Burd, K. A. (2015, February). *Moral foundations theory and jury decision making.* Poster presented at the Social Psychology and Law Preconference of the annual meeting of the Society for Personality and Social Psychology, Long Beach, California.

Burd, K. A., & Burrow, A. L. (2017). Conceptualizing similarities and differences between purpose in life and self-affirmation. *Social and Personality Psychology Compass*, *11*(12), 1-13.

Burd, K. A., Burrow, A. L., Torrie, R. M., & Nam, I. Y. (2016a, January). *Can sense of purpose or self-affirmation increase balance in information searches during forensic investigations?* Poster presented at the Social Psychology and Law Preconference of the annual meeting of the Society for Personality and Social Psychology, San Diego, California.

Burd, K. A., Ceci, S. J., & Salerno, J. M. (2016b, March). *Emotion, morality, and jury decision-making.* Paper presented at the annual conference of the American Psychology-Law Society, Atlanta, Georgia.

Burrow, A. L., & Hill, P. L. (2013). Derailed by diversity? Purpose buffers the relationship between ethnic composition on trains and passenger negative mood. *Personality and Social Psychology Bulletin*, *39*(12), 1610–1619.

Burrow, A. L., & Spreng, R. N. (2016). Waiting with purpose: A reliable but small association between purpose in life and impulsivity. *Personality and Individual Differences*, *90*, 187–189.

Burrow, A. L., Stanley, M., Sumner, R., & Hill, P. L. (2014a). Purpose in life as a resource for increasing comfort with ethnic diversity. *Personality and Social Psychology Bulletin*, *40*(11), 1507–1516.

Burrow, A. L., Sumner, R., & Ong, A. D. (2014b). Perceived change in life satisfaction and daily negative affect: The moderating role of purpose in life. *Journal of Happiness Studies*, *15*(3), 579–592.

Cameron, C. D., Brown-Iannuzzi, J. L., & Payne, B. K. (2012). Sequential priming measures of implicit social cognition: A meta-analysis of associations with

behavior and explicit attitudes. *Personality and Social Psychology Review*, *16*(4), 330-350.

Cohen, G. L., Aronson, J., & Steele, C. M. (2000). When beliefs yield to evidence: Reducing biased evaluation by affirming the self. *Personality and Social Psychology Bulletin*, *26*(9), 1151–1164.

Cohen, G. L., Garcia, J., Apfel, N., & Master, A. (2006). Reducing the racial achievement gap: A social-psychological intervention. *Science*, *313*(5791), 1307–1310.

Cohen, R., Bavishi, C., & Rozanski, A. (2016). Purpose in life and its relationship to all-cause mortality and cardiovascular events: A meta-analysis. *Psychosomatic Medicine*, *78*(2), 122–133.

Correll, J., Hudson, S. M., Guillermo, S., & Ma, D. S. (2014). The police officer's dilemma: A decade of research on racial bias in the decision to shoot. *Social and Personality Psychology Compass*, *8*(5), 201-213.

Correll, J., Park, B., Judd, C. M., & Wittenbrink, B. (2002). The police officer's dilemma: Using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology*, *83*(6), 1314.

Correll, J., Park, B., Judd, C. M., Wittenbrink, B., Sadler, M. S., & Keesee, T. (2007). Across the thin blue line: Police officers and racial bias in the decision to shoot. *Journal of Personality and Social Psychology*, *92*(6), 1006-1023.

Correll, J., Urland, G. R., & Ito, T. A. (2006). Event-related potentials and the decision to shoot: The role of threat perception and cognitive control. *Journal of Experimental Social Psychology*, *42*(1), 120 – 128.

Craig, M. A., & Richeson, J. A. (2014a). More diverse yet less tolerant? How the increasingly diverse racial landscape affects White Americans' racial attitudes. *Personality and Social Psychology Bulletin, 40*, 750–761.

Craig, M. A., & Richeson, J. A. (2014b). On the precipice of a "majority-minority" America: Perceived status threat from the racial demographic shift affects White Americans' political ideology. *Psychological Science, 25*, 1189–1197.

Craig, M. A., & Richeson, J. A. (in press). Hispanic population growth engenders conservative shift among non-Hispanic racial minorities. *Social Psychological & Personality Science.*

Creswell, J. D., Welch, W. T., Taylor, S. E., Sherman, D. K., Gruenewald, T. L., & Mann, T. (2005). Affirmation of personal values buffers neuroendocrine and psychological stress responses. *Psychological Science*, *16*(11), 846–851.

Eberhardt, J. L., Goff, P. A., Purdie, V. J., & Davies, P. G. (2004). Seeing Black: Race, crime, and visual processing. *Journal of Personality and Social Psychology*, *87*(6), 876-893.

Fogelman, N., & Canli, T. (2015). "Purpose in life" as a psychosocial resource in healthy aging: An examination of cortisol baseline levels and response to the trier social stress test. *NPJ: Aging and Mechanisms of Disease, 1.*

Fossett, M. A., & Kiecolt, K. J. (1989). The relative size of minority populations and white racial attitudes. *Social Science Quarterly*, *70*(4), 820.

Frantz, C. M., Cuddy, A. J., Burnett, M., Ray, H., & Hart, A. (2004). A threat in the computer: The race implicit association test as a stereotype threat experience. *Personality and Social Psychology Bulletin*, *30*(12), 1611–1624.

Fridell, L. A. (2017). Explaining the disparity in results across studies assessing racial disparity in police use of force: A research note. *American Journal of Criminal Justice*, *42*(3), 502-513.

Fryer Jr, R. G. (2016). *An empirical analysis of racial differences in police use of force* (No. w22399). National Bureau of Economic Research.

Gawronski, B., Morrison, M., Phills, C. E., & Galdi, S. (2017). Temporal stability of implicit and explicit measures: A longitudinal analysis. *Personality and Social Psychology Bulletin*, *43*(3), 300-312.

Goldhill, O. (2017, December 3). (Un)conscious impact: The world is relying on a flawed psychological test to fight racism. *Quartz.* Retrieved from https://qz.com/1144504/the-world-is-relying-on-a-flawed-psychological-test-to-fight-racism/

Graham, J., Haidt, J., & Nosek, B. (July 2008). The Moral Foundations Questionnaire.

Greenwald, A. G., Oakes, M. A., & Hoffman, H. G. (2003). Targets of discrimination: Effects of race on responses to weapons holders. *Journal of Experimental Social Psychology*, *39*(4), 399–405.

Hilton, B. A. (1989). The relationship of uncertainty, control, commitment, and threat of recurrence to coping strategies used by women diagnosed with breast cancer. *Journal of Behavioral Medicine*, *12*(1), 39-54.

Ishida, R., & Okada, M. (2006). Effects of a firm purpose in life on anxiety and sympathetic nervous activity caused by emotional stress: Assessment by psycho-physiological method. *Stress and Health*, *22*(4), 275-281.

James, L., James, S. M., & Vila, B. J. (2016). The reverse racism effect: Are cops more hesitant to shoot Black than White suspects? *Criminology & Public Policy, 15*(2), 457-479.

Judd, C. M., Blair, I. V., & Chapleau, K. M. (2004). Automatic stereotypes vs. automatic prejudice: Sorting out the possibilities in the weapon paradigm. *Journal of Experimental Social Psychology*, *40*(1), 75–81.

Loseman, A., & van den Bos, K. (2012). A self-regulation hypothesis of coping with an unjust world: Ego-depletion and self-affirmation as underlying aspects of blaming of innocent victims. *Social Justice Research*, *25*(1), 1–13.

Lowery, B. S., Hardin, C. D., & Sinclair, S. (2001). Social influence effects on automatic racial prejudice. *Journal of Personality and Social Psychology*, *81*(5), 842.

Machell, K. A., Disabato, D. J., & Kashdan, T. B. (2016). Buffering the negative impact of poverty on youth: The power of purpose in life. *Social Indicators Research*, *126*(2), 845–861.

McElvain, J. P., & Kposowa, A. J. (2008). Police officer characteristics and the likelihood of using deadly force. *Criminal Justice and Behavior, 35*(4), 505-521.

McKnight, P. E., & Kashdan, T. B. (2009). Purpose in life as a system that creates and sustains health and well-being: An integrative, testable theory. *Review of General Psychology*, *13*(3), 242.

Moskowitz, G. B., Okten, I. O., & Gooch, C. M. (2015). On race and time. *Psychological Science*, *26*(11), 1783–1794.

Neville, H., Lilly, R., Duran, G., Lee, R., & Browne, L. (2000). Construction and initial validation of the color-blind racial attitudes scale (CoBRAS). *Journal of Counseling Psychology, 47*, 59-70.

Nix, J., Campbell, B. A., Byers, E. H., & Alpert, G. P. (2017). A bird's eye view of civilians killed by police in 2015. *Criminology & Public Policy, 16*(1), 309-340.

Oswald, F. L., Mitchell, G., Blanton, H., Jaccard, J., & Tetlock, P. E. (2013). Predicting ethnic and racial discrimination: A meta-analysis of IAT criterion studies. *Journal of Personality and Social Psychology*, *105*(2), 171-192.

Outten, H. R., Schmitt, M. T., Miller, D. A., & Garcia, A. L. (2012). Feeling threatened about the future whites' emotional reactions to anticipated ethnic demographic changes. *Personality and Social Psychology Bulletin*, *38*(1), 14–25.

Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology*, *81*(2), 181.

Payne, B. K. (2005). Conceptualizing control in social cognition: How executive functioning modulates the expression of automatic stereotyping. *Journal of Personality and Social Psychology*, *89*(4), 488.

Payne, K., Niemi, L., & Doris, J. M. (2017, Mach 27). How to think about "implicit bias." *Scientific American.* Retrieved from https://www.scientificamerican.com/article/how-to-think-about-implicit-bias/

Pearson, A. R., Dovidio, J. F., & Gaertner, S. L. (2009). The nature of contemporary

prejudice: Insights from aversive racism. *Social and Personality Psychology Compass*, *3*(3), 314-338.

Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015). *Linguistic inquiry and word count: LIWC2015.* Austin, TX: Pennebaker Conglomerates.

Plant, E. A., & Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal of Personality and Social Psychology, 75*(3), 811 - 832.

Richeson, J. A., & Ambady, N. (2003). Effects of situational power on automatic racial prejudice. *Journal of Experimental Social Psychology*, *39*(2), 177–183.

Routledge, C., & Juhl, J. (2010). When death thoughts lead to death fears: Mortality salience increases death anxiety for individuals who lack meaning in life. *Cognition and Emotion*, *24*(5), 848-854.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, *69*(4), 719.

Sadler, M. S., Correll, J., Park, B., & Judd, C. M. (2012). The world is not Black and White: Racial bias in the decision to shoot in a multiethnic context. *Journal of Social Issues*, *68*(2), 286-313.

Schaefer, S. M., Boylan, J. M., van Reekum, C. M., Lapate, R. C., Norris, C. J., Ryff, C. D., & Davidson, R. J. (2013). Purpose in life predicts better emotional recovery from negative stimuli. *PLoS One*, *8*, e80329.

Schmeichel, B. J., & Martens, A. (2005). Self-affirmation and mortality salience: Affirming values reduces worldview defense and death-thought accessibility. *Personality and Social Psychology Bulletin*, *31*(5), 658–667.

Schmeichel, B. J., & Vohs, K. (2009). Self-affirmation and self-control: Affirming core values counteracts ego depletion. *Journal of Personality and Social Psychology*, *96*(4), 770.

Semyonov, M., Raijman, R., Tov, A. Y., & Schmidt, P. (2004). Population size, perceived threat, and exclusion: A multiple-indicators analysis of attitudes toward foreigners in Germany. *Social Science Research*, *33*(4), 681–701.

Sherman, D. K., Bunyan, D. P., Creswell, J. D., & Jaremka, L. M. (2009). Psychological vulnerability and stress: The effects of self-affirmation on sympathetic nervous system responses to naturalistic stressors. *Health Psychology*, *28*(5), 554.

Sherman, D. K., & Cohen, G. L. (2002). Accepting threatening information: Self–affirmation and the reduction of defensive biases. *Current Directions in Psychological Science*, *11*(4), 119–123.

Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. *Advances in Experimental Social Psychology*, *38*, 183–242.

Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. *Advances in Experimental Social Psychology*, *21*, 261-302.

Steele, C. M., & Liu, T. J. (1983). Dissonance processes as self-affirmation. *Journal of Personality and Social Psychology, 45*(1), 5-19.

Swaine, J., & McCarthy, C. (2017, January 8). Young black men again faced highest rate of US police killings in 2016. *The Guardian.* Retrieved from https://www.theguardian.com/us-news/2017/jan/08/the-counted-police-killings-2016-young-black-men

Trawalter, S., Adam, E. K., Chase-Lansdale, P. L., & Richeson, J. A. (2012). Concerns about appearing prejudiced get under the skin: Stress responses to interracial contact in the moment and across time. *Journal of Experimental Social Psychology*, *48*(3), 682–693.

Violanti, J. M. & Aron, F. (1995). Police stressors: Variations in perception among police personnel. *Journal of Criminal Justice, 23*(3), 287-294.

Vohs, K. D., Park, J. K., & Schmeichel, B. J. (2013). Self-affirmation can enable goal disengagement. *Journal of Personality and Social Psychology*, *104*(1), 14.

Vorauer, J. D. (2012). Completing the implicit association test reduces positive intergroup interaction behavior. *Psychological science*, *23*(10), 1168-1175.

Watson, D., Clark, L. A., & Tellegan, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070.

# CHAPTER 4

# DIVERGING DECISIONS: A COMPARISON OF JURY VERDICT PROCEDURES


## Abstract

Courts with greater mistrust of jurors often structure juries' decision making more so than courts with more inherent trust in jurors and their determinations. For instance, criminal courts in the United States most often utilize general verdicts, where jurors freely deliberate about the evidence and come to an independent verdict. However, several court systems abroad have begun to require reasons accompany jury verdicts in the hopes that a reasoning requirement will reduce bias and arbitrary decision making. Importantly, no known empirical research has explored the impact of a reasoning requirement on juror decision making in comparison to other verdict procedures (e.g., general or special verdicts). The current study explores the impact of verdict procedures on mock juror decision making in a civil case. Results indicate that mock jurors were significantly more likely to find for the defendant when utilizing special verdict procedures, while mock juror verdicts were similar across all other verdict procedures. Further, mock jurors' overall perceptions of the plaintiff and defendants' cases predicted verdict, over and above general perceptions of the plaintiff and defendant. The legal implications of these results for verdict procedures are discussed.

DIVERGING DECISIONS: A COMPARISON OF JURY VERDICT PROCEDURES

Jurors are tasked with remembering, integrating, and utilizing large amounts of complex evidence. Dan Simon (2004) states:

> Most legal cases that are litigated and appealed are [complex], in that the facts can be ambiguous, incomplete, and contradictory; different rules, values, and principles can be invoked to support opposite conclusions; and the case at hand can be somewhat analogous to more than one previous decision. On their face, such tasks might seem intractable. (p. 516)

The above account draws attention to just how difficult it can be for jurors to reach a verdict during trial.

Legal and psycholegal scholars have long questioned how jurors make decisions, what probative and non-probative factors might impact their decisions, and what can be done to improve juror decision making accuracy. Many theories of reasoning describe the complexities of the decision making process generally (for a review, see Osman, 2004), with some paying special attention to decision making in the context of juries (e.g., Pennington & Hastie, 1986, 1988, 1992).

The courts aim to promote strong decision making in jurors, and some jury systems have adopted verdict procedures that aim to reduce arbitrary decision making and facilitate review, particularly on appeal (Thaman, 2011). In particular, systems that appear to have a general mistrust of jurors seem especially keen on scaffolding jurors' decision making (Marder & Hans, 2015), despite the fact that such procedures undermine jury independence (Burd & Hans, in press). To this end, several countries

have begun to require that jurors provide substantiated reasons in support of their verdict decisions (Burd & Hans, in press; Thaman, 2002; 2011).

Given the general complexity of the tasks jurors face, it is clear why some courts aim to assist jurors by requiring reasons for their verdicts, and why some believe that requiring jurors to provide reasons might help to reduce bias and improve decision making. However, psychological theory suggests there is good reason to suspect that requiring jurors to produce reasons for their decisions *after* they have already rendered a verdict is not likely to promote stronger decision making, or improve decision accuracy. For instance, related work suggests that individuals are often unaware of and unable to report their cognitive processes, and when they are asked to do so, may not be able to report why they have made a decision, or how their attitudes might have impacted their decision (e.g., Nisbett & Wilson, 1977). Importantly, although several countries in Europe require reasons for jurors' verdicts (e.g., Csere, 2012; Thaman, 2007, 2011), no known empirical research has explored these issues.

In the current study, mock juror decision making was compared across four verdict procedure contexts: general verdicts (a verdict in which a jury reaches a legal conclusion, such as whether a person is liable or not), special verdicts (a verdict in which a jury reaches a factual rather than legal conclusion), and two different variations of a procedure wherein jurors gave a general verdict but were required to provide reasons for their verdicts. The aim of the current study was to investigate which verdict procedure, if any, might produce the strongest verdict decisions (i.e., most in line with the probative evidence). In addition, this research explored whether

certain reasoning requirements might mitigate the impact of racial biases on juror decision making. While many sources of biases might influence jurors' decisions, the current study addresses the impact of racial bias in the current study given the prominence of racial inequalities in the justice system (e.g., Hetey & Eberhardt, in press; Kutateladze, Andiloro, Johnson, & Spohn, 2014; Voigt et al., 2017).

## Reasoned Verdicts

Many countries are turning to the use of reasoned verdicts, including countries with classic jury systems (e.g., Russia and Spain) (e.g., Csere, 2012; Thaman, 2007, 2011) and those with mixed courts (e.g., France and Italy) (Cohen, 2016; Hans & Jolivet, 2016). In classic juries, jurors typically deliberate freely without much external influence. In contrast, in mixed courts, professional and lay judges deliberate together. It is important to discuss some of the variations in these reasoned verdict procedures in order to get a clear view of why some courts favor them so strongly, and to explore why, contrary to popular belief, they may not actually lead to stronger jury decisions.

Spain provides one contemporary classic jury model that utilizes reasoned verdicts. In Spain, jurors do not deliberate freely before rendering a verdict: Instead, the judge provides jurors with a series of "yes" and "no" questions regarding the facts of the case, the charges, and possible defenses, along with a summary of the case from the judge (Thaman, 2011). Jurors are meant to deliberate on and take a vote for each of the questions posed to them (Thaman, 2011). For each question, they must then provide concise reasons for why they found each fact to be proved or not proved, and to detail which evidence they relied upon in make their decision (Ley Orgánica de 22

de Mayo, 1995; Thaman, 1997). The jury also provides a general vote of "guilty" or "not guilty" (Thaman, 2011). Interestingly, jurors vote on each question, and verdicts are decided by majority rule (Jimeno-Bulnes, 2007, 2011).

Importantly, the judge reviews all responses to verify the reasons provided are sufficient, and can rule that the reasons provided were insufficient or contained errors (Thaman, 2011). However, the standard by which judges review reasons for sufficiency are not standardized, and range from the "minimalist approach" (judges assess the reasons provided and will accept general references to case evidence without a detailed account) to the "maximalist approach" (wherein jurors are required to provide in-depth, substantiated reasons, including a full account of their decision making process and which facts they believed were or were not proven) (Thaman, 2011). Importantly, if the judge deems that the verdict was not accompanied by sufficient reasoning, he/she can return the verdict form to the jury for correction; however, there is no requirement that the judge do so, and in either case, this grants the judge a large level of control over the jury's verdicts (Thaman, 2011).

Belgium, too, has a reasoning requirement for verdicts. Similarly to Spain, judges draft a question list for jurors, who deliberate independently of the judges, reach a verdict, and must answers the questions provided. The jury then discusses the verdict with a panel of three judges, who help the jury to draft their reasons. If the panel determines that the jury did not properly apply the law, or erred in the reasons they provided, their judgment may be set aside (Thaman, 2011).

Like Spain and Belgium, Austria requires the jury to provide reasons for their verdicts, but jurors do not receive any assistance when drafting the reasons for their

judgment (Taylor, 2011). In Austria, too, the jury may be asked to correct its verdict forms if the judges deem it to be incomplete or contains any contradictions (Taylor, 2011).

Italy and France utilize mixed courts where lay and professional judges deliberate together and collectively provide reasons to question lists (Hans & Jolivet, 2016; Malsch, 2016). In Italy and France, each judge (professional and lay) must vote on every question, secretly in France but not in Italy (Hans & Jolivet, 2016). Further, in both Italy and France, professional judges draft the reasons for the verdict (Hans & Jolivet, 2016).

### General and Special Verdicts in the U. S.

In the U.S., most criminal trials utilize general verdicts. Here, jurors listen to the trial evidence, receive judicial instructions, and then retire to deliberate on the evidence, privately. The deliberation process is quite independent, with few procedural guidelines. Jurors may deliberate until they reach a decision, which must be unanimous in most cases. No reasons are required of the jury, and thus, little is usually known about the deliberation process or how jurors arrived at a decision.

General verdicts can also be utilized in civil courts in the U.S., and general verdicts with answers to written questions are also permitted (Fed. R. Civ. P. 49). In these cases, a general verdict is rendered, but then jurors must also answer a series of factual questions (Fed. R. Civ. P. 49(b)(1)). General verdicts with answers to written questions can also be employed in criminal cases: Here, questions might be posed to jurors when they are asked to assess a defense, or, in a case when a defendant has received multiple charges, which ground the jury will convict on (Nepveu, 2003).

Further, questions can be used during sentencing to decide facts regarding aggravating or mitigating circumstances, or to assess jurors' perceptions of the defendant's dangerousness (Nepveu, 2003).

Special verdicts in the U. S. share some similarity to reasoned verdicts utilized abroad. The jury is asked to answer factual questions pertaining to the case, and the judge ultimately renders a verdict based on the jury's responses to the written questions (Fed. R. Civ. P. 49). Special verdicts are meant to help jurors identify and organize key pieces of information during trial (Casper, 1993). In addition, special verdicts might help jurors by limiting the effect of confusing judicial instructions (Stephens, 1987). Importantly, special verdicts are not used in criminal cases within the U. S., as some argue that leaving the ultimate decision to the judge would violate defendants' Sixth Amendment right to have a jury of peers make the ultimate determination (Nepveu, 2003, citing *United States v. Gaudin*, 515 U.S. 506, 510 (1995); U.S. Const. amend. VI).

## Comparing Verdict Procedures

As noted above, several countries have adopted reasoned verdict procedures on the assumption that such verdicts will promote strong jury decision making, increase transparency in the decision making process, and increase reviewability for judges, or for defendants on appeal. However, no known empirical research has informed this debate. When juries utilize reasoned verdict, special verdict, or general verdict with answers to written questions procedures, these tasks require that the jury answers a, sometimes long, series of questions *before* providing reasons for their responses. When utilizing either reasoned verdicts or general verdicts with answers to written

questions, jurors may make a holistic determination of liability, and then answer the fact-based questions. If this is the case, then jurors might be answering the factual questions in a way that they feel aligns with their verdict in a post hoc manner, rather than making a determination of guilt based on their answers to the written questions in criminal cases.

## Examining Reasoned, Special, and General Verdicts through a Psychological Lens

Although no known empirical research has investigated the impact of reasoned verdict procedures on juror decision making, much related decision making research suggests that reasoned verdicts may not actually promote decision making more in line with the evidence. One of the strongest pushes for reasoned verdicts is based on the belief that requiring reasons of jurors will reduce ambiguity and bias in their decision making to promote verdict accuracy. For instance, the reasoning requirement might, at a minimum, compel jurors to think carefully about their decisions (Jimeno-Bulnes, 2007). Further, some positive experiences with reasoned verdicts in Spain suggest that the reasoning requirement might promote jurors to think carefully about the evidence and to compare it to the defendant's version of events (e.g., a defendant claiming a stabbing was an accident, versus the alternative possibility, that the stabbing was intentional) (Thaman, 1997).

Those in favor of general verdicts argue that free deliberation is inherently filled with debate as jurors discuss key issues to come to a unanimous decision (Abramson, 2015). Further, some legal commentators argue that general verdicts are based on evidence, and that jury verdicts are already very clear (Lempert, 2007, 2015).

Proponents of special verdicts argue that these procedures help jurors to identify key facts within a case and discourage jurors from taking a holistic approach to their decision making (Henderson, Bertram, & Toke, 1995). By asking jurors to answer factual questions, independently of other questions, special verdicts might make it less likely that jurors tailor their responses to the questions based on their desired out come of the case (Henderson et al., 1995). Clermont (2018) argues that jurors should not, and do not, consider an overall question, even in cases with multiple elements, as jurors are tasked with applying a standard of proof to each element. Casper (1993) suggests that special verdicts might help to increase juror comprehension of evidence and organize testimony and legal rules.

Below, relevant psychological and jury research is examined to explore how jurors might reason and make decisions across these various verdict contexts. Several models of decision making and reasoning, detailed below, suggest that the reasoning requirement may not improve decision accuracy compared to other verdict procedures.

**Dual-process Models**

Dual-process models suggest that humans reason using two separate systems when reasoning, working in parallel, which may be in conflict with one another. System I is a fast, intuitive processor of information, while System II is a slower, more deliberative system. System I's effortless and intuitive responses may lead to errors, but System II can catch, and sometimes override these improper intuitions. System I is more likely to win out over System II during novel or highly complex situations, and at these times, humans are more susceptible to making errors, which System II may not catch (e.g., Kahneman & Frederick, 2002).

These parallel processors are highly relevant to the context of jury decision making, particularly in trials with complex and novel information that jurors must sift through and integrate as they make their decisions. In these situations, System I might be more likely to be activated and to win out over System II. If jurors anticipate having to provide reasons for their judgments, then System II might be activated. This would be particularly helpful if System II is initiated as jurors are hearing testimony and evidence, as it might increase their objectivity. However, no known previous research has empirically investigated whether a reasoning requirement actually increases jurors' reliance on System II processing.

**The Story Model of Jury Decision Making**

The story model of juror decision making is considered one of the most accurate accounts of how jurors make decisions when determining guilt using a general verdict (Levett & Devine, 2017; Vidmar & Hans, 2007). The story model suggests that as jurors listen to testimony and evidence at trial, they begin to form a narrative that they feel best describes what they are hearing (Pennington & Hastie, 1986, 1988, 1992, 1993). In the process of deliberation, the story model suggests that jurors discuss and analyze their narratives with one another, and then, through group discussions, create or decide on a narrative that is the best fit for the evidence (Pennington & Hastie, 1993). Then, when making a determination of guilt, they compare their narrative to the verdict category options and choose the verdict that most aligns with their conception of the trial narrative and which best accounts for the case facts (Pennington & Hastie, 1992).

Research regarding the story model suggests that jurors might make decisions most in line with the evidence, and with more confidence, when allowed to structure the evidence according to a narrative and to deliberate freely (Pennington & Hastie, 1992). In one study, researchers found that mock jurors made stronger decisions (more in line with the evidence) when evidence was presented in narrative form, rather than by legal issue (Pennington & Hastie, 1992). Item-by-item evidence presentation is somewhat similar to reasoned and special verdicts, and in the current study, made mock jurors less confident in their judgments and caused them to use less explanation-based reasoning (Pennington & Hastie, 1992). Generally, research regarding the story model suggests that, without prompting, mock jurors engage in deep deliberative reasoning, make inferences, use analogy, and compare alternatives (Pennington & Hastie, 1993).

**Moral Reasoning**

In line with some dual-process models, the Social Intuitionist Model proposes that deliberative reasoning often loses out to intuitive judgments. Haidt (2001) suggests that when individuals are confronted with moral stimuli, they immediately form a fast, intuitive, gut-based judgment about the situation, assess their gut reaction to determine their value judgment about the stimuli (ie: good or bad), and only after, and only sometimes, reason about the moral stimuli. In this model, moral emotions, like anger and disgust, are direct causes of moral judgments (Haidt, 2001). Haidt (2001) argues that individuals may never begin to reason about their moral judgments, and usually only do so when their judgments are called into question as a way to explain, justify, or understand them. In certain situations, individuals may reason

about a moral stimulus, but Haidt argues that this is exceedingly rare, and usually only occurs when there is a weak initial intuition (Haidt, 2001).

In one study, Haidt and colleagues (Haidt, Björklund & Murphy, 2000) demonstrated that individuals typically make fast, intuitive judgments, and often struggle when asked to provide reasons for such judgments: Participants read several stories depicting acts that seemed intuitively immoral. Experimenters then asked participants to determine whether the acts were moral or immoral, and why. Participants were often dumbfounded, and could typically not explain why the seemingly immoral, but not harmful, acts were in fact wrong (Haidt et al., 2000). This study illustrates how judgments are often developed post hoc, after a strong moral intuition has already taken hold.

fMRI research also lends support to the idea that moral stimuli can invoke strong emotional reactions that are not necessarily accompanied by strong non-emotional processing. Across two studies, researchers found that participants presented with personal moral dilemmas (e.g., asked about the appropriateness of the footbridge problem, a variation of the trolley problem, wherein participants are asked whether it would be appropriate to push a large man onto the track to prevent the deaths of five other individuals) experienced increased activation in parts of the brain associated with emotional processing compared to participants asked about impersonal moral dilemmas and non-moral dilemmas (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). Further, participants' activation of areas of the brain implicated in working memory were less active in these personal-moral dilemmas, and such areas of the brain have been shown to be less active during emotional processing (Greene et

al., 2001). In the current studies, these effects were reversed for impersonal moral dilemmas and non-moral dilemmas (Greene et al., 2001).

This body of work is very relevant to the reasoned verdict debate as it illustrates an illusion of objectivity: Reasons generated post hoc certainly may seem objective, but importantly, when they follow a judgment they may not be easily changed and can be based on little objective evidence. Haidt argues that individuals are rarely able to override their initial judgments, but that it is possible if one tries to take another perspective, which could in turn trigger a new intuition (Haidt, 2001). In relation to the reasoning requirement debate, this suggests that asking jurors to provide reason may just spark post-hoc justifications for intuitive, but not deliberatively reasoned judgments. However, if jurors are aware in advance that they will be required to provide reasons and are also exposed to different perspectives during deliberation, they may be able to counteract any incorrect, intuitive judgments.

**Predecisional Distortion and Motivated Reasoning**

Research regarding predecisional distortion and motivated reasoning suggest that a reasoning requirement may not ensure stronger juror decisions compared to general verdicts. Predecisional distortion occurs when individuals distort new incoming information to fit with a preexisting belief or preference (Russo, Meloy, & Medvec, 1998). Further, research suggests that predecisional distortion is more likely to occur when the incoming information is ambiguous and could be interpreted several ways (Russo et al., 1996). In research exploring predecisional distortion in mock trial settings, Carlson and Russo (2001) found that mock jurors distorted incoming evidence to conform with their preexisting beliefs in both civil and criminal cases,

even when warned not to do so and admonished in judicial instructions. The likelihood of engaging in predecisional distortion was even greater when jurors were more confident in a leading verdict (Carlson & Russo, 2001).

Like predecisional distortion, motivated cognition and reasoning can distort individuals' perceptions of new evidence in light of their verdict preference (Kahan, 2013). In a legal context, Sood (2015) found that participants acting as judges were more likely to interpret illegally obtained evidence as permissible when the crime was more severe compared to less severe. Thus, participants perceived illegally obtained evidence and even case law differently depending on what case outcome they preferred (Sood, 2015).

Research regarding predecisional distortion and motivated reasoning suggests that reasoning requirements may not be more successful in promoting verdict accuracy or reducing bias compared to general verdicts. Research in these areas suggests that a reasoning requirement may not actually reduce bias in jurors' reasoning or promote decision accuracy if the reasons are required *after* jurors are already likely to have a leading preference for a verdict. Instead, the reasoning requirement may increase juror confidence without increasing the deliberative processing of evidence before an intuitive decision regarding verdict is made.

**Coherence-based Reasoning**

Research regarding coherence-based reasoning (Simon, 2004) also suggests that the reasoning requirement may not protect jurors from biased decision making. According to Simon (2004), coherence-based reasoning is likely at play during complex decision making tasks. This model of reasoning proposes that decisions are

made as a product of cognitive processes that occur bi-directionally: "Premises and facts both determine conclusions and are affected by them in return" (Simon, 2004, p. 511). Further, Simon (2004) argues that "[a] natural result of this cognitive process is a skewing of the premises and facts toward inflated support for the chosen decision" (p. 511). According to this model, as one option becomes more and more favored, it is perceived as increasingly strong while the alternative option is perceived as weaker and weaker, which increases confidence in the leading choice and makes it seem like an obvious option.

These theoretical assumptions have been empirically tested utilizing mock jury paradigms. Simon (2004) finds that information regarding the character of the defendant (e.g., malevolent or benevolent) affects mock jurors' verdict determinations, ratings of other case-related evidence, and unrelated variables. Related research (Simon, Stenstrom, & Read, 2015) also finds that emotion manipulations completely unrelated to a decision task can trigger coherent shifts in motivation and liking of key characters in vignettes. This research suggests that a reasoning requirement may not be enough to promote stronger juror decisions: Once jurors begin to favor one verdict over another, their interpretation of new evidence is likely to be distorted to conform to their preference, and the reasons they provide after making their decisions will likely be formed completely post hoc, all to align with their preferred verdict.

## Study Overview

Jury decision making in the context of general verdicts is, of course, not without challenges, and can be susceptible to biases. For instance, one study suggests that mock jurors have better recognition for evidence that aligns with their verdict

preference, and mock jurors at times incorrectly recalled information that was never presented if it fit their narrative of the trial evidence (Pennington & Hastie, 1988). Further, some research indicates that jurors may fail to discuss important topics, particularly if those topics relate to a verdict that no single juror is favoring (Ellsworth, 1989). Juror discussions can also be "verdict-driven" rather than "evidence-driven," (Hastie, Penrod, & Pennington, 1983), and verdict-driven deliberations are more likely than evidence-driven deliberations to end in a hung jury (Hannaford, Dann, & Munsterman, 1998).

However, research suggests that jurors typically make sound decisions: U.S. judges are often in agreement with juries' criminal and civil verdicts (Eisenberg et al., 2005), and the strength of the evidence presented at trial is the best predictor of juries' verdicts (Eisenberg et al., 2005). Juror reasoning during deliberation is often complex, and mock jurors make connections and inferences based on trial evidence, properly reference the law in their discussions, and often are able to accurately resolve questions regarding case facts (Ellsworth, 1989).

Despite the lack of empirical research regarding reasoned verdicts, several countries have established a reasoning requirement for jurors. Given the applicable research described above regarding how individuals and groups generally make decisions, it is important to investigate how jurors make decisions across these varied contexts and verdict procedures. The current study examined juror decision making across four verdict procedures, including general verdicts, special verdicts, and two variations of verdict procedures that require jurors to provide reasons for their judgments. In the verdict conditions requiring reasons, mock jurors were asked to give

a general verdict. In one condition (the Reasons After condition), they were asked to provide reasons for their judgments *after* rendering a verdict finding for the plaintiff or the defendant, which bears some similarity to the reasoning requirements seen abroad. In the other condition (the Reasons Before condition), mock jurors were asked to provide reasons for why they might find for the plaintiff or for the defendant *before* finding for the plaintiff or the defendant. It is important to consider if and *when* a reasoning requirement might promote stronger juror decision making, as, to our knowledge, countries do not typically require that jurors provide reasons before they begin the other verdict tasks.

In order to explore whether these verdict procedures might increase juror decision accuracy and reduce bias, plaintiff race varied: In half of the conditions, the plaintiff had a stereotypically European American name (the No-bias condition), and in the other half, a stereotypically African American name (the Bias condition). If one or more of these verdict procedures reduces the impact of racial bias, then we should expect to see fair treatment across plaintiff race.

## Hypotheses

Based on the above literature, several predictions were made regarding jurors' verdicts, verdict confidence, and confidence in awarded damages, when applicable.

### Verdict

It was hypothesized that participants would be more likely to find for the defendant in the Bias conditions, with the exception of the Reasons Before conditions. Requiring mock jurors to provide reasons in support of the plaintiff and defendant *before* they render a judgment should mitigate the effects of racial bias. Liu (2017)

found that requiring mock judges to provide reasons before rendering a judgment substantially reduced the effect of emotion compared to those who did not provide reasons before making a determination of guilt. Further, Liu (2017) found that writing reasons after rendering a judgment did not reduce the impact of emotional bias.

Generally, mock jurors' decisions are expected to be similar in the General and Special Verdict conditions. Wiggins and Breckler (1990) explored juror decision making when jurors were asked to render either a special or general verdict: Their work suggests no difference between these two procedures. Instead, mock jurors' decisions were driven by their overall perceptions of the case and witnesses. In contrast, research with actual jurors found that jurors who had used verdict forms felt more informed and felt that they had reached a correct decision compared to those who did not use a verdict form (Heuer & Penrod, 1994).

It was further posited that mock jurors would find for the plaintiff more often in the Bias + Reasons Before a General Verdict condition, compared to the Bias + Reasons After a General Verdict condition. Racial bias should decrease the likelihood of finding for the plaintiff, and this should be exacerbated in the Reasons After conditions. However, when mock jurors are asked to provide reasons in support of the plaintiff and defendant *before* rendering a finding, support for the plaintiff should become more equal. Research by Simon (2004) suggests that an instruction to mock jurors to consider the opposite of their leading preference reduces coherence to a preexisting belief.

It was also expected that participants' overall impressions of the case (e.g., impressions of the plaintiff and defendant) would predict jurors' judgments, such that

the more favorable one's impressions of the plaintiff, the more likely they would be to find for the plaintiff. Importantly, it was hypothesized that, across all conditions except for those in the Reasons Before conditions, jurors' experience of emotions would independently predict their finding for the plaintiff or defendant.

**Verdict Confidence**

It is difficult to make a prediction regarding confidence in general versus special verdict conditions. In one study, mock jurors utilizing a special verdict procedure were less confident in their judgments compared to those employing a general verdict (Wiggins & Breckler, 1990). In contrast, actual jurors who utilized a verdict form felt more confident in their decision compared to those who did not use such a form (Heuer & Penrod, 1994). Importantly, verdict forms in this study were not randomly assigned, so it is possible that other differences existed in these trials in addition to the verdict forms used.

No prediction was made regarding confidence in the Reasons Before conditions: One study suggests that asking mock jurors to consider the opposite of their preferred belief before rendering a judgment did not decrease juror confidence in their decisions (Simon, 2004). However, Liu (2017) found that participants acting as judges were much less confidence when asked to provide reasons before making a decision compared to those who were not asked to provide reasons.

**Damages**

Based on previous research by Wiggins and Breckler (1990), it was hypothesized that damage awards would be higher in the special verdict conditions compared to the general verdict conditions. In their research, they found that mock

jurors awarded more compensatory damages when using a special compared to a general verdict procedure, and the current study only inquired about this type of award.

It was further expected that damage awards would be higher for the plaintiff in the No Bias conditions compared to Bias conditions. Researchers examined over 9,000 civil jury trials in Illinois and found that African American litigants (plaintiffs and defendants) lost more often than European American litigants, and African American plaintiffs were awarded smaller sums (Chin & Peterson, 1985).

## Methods

### Participants

In the current study, two separate forms of recruitment were used. Four hundred twelve individuals began the survey, 235 (57% of total sample) of which were recruited utilizing snowball sampling via email, social media, and word of mouth. Participants in this sample volunteered their time and were not compensated for their participation. One hundred seventy-seven participants (43% of total sample) were recruited utilizing Mechanical Turk (Paolacci, Chandler, & Ipeirotis, 2010) and Turk Prime (Litman, Robinson, & Abberbock, 2017). Individuals in this sample who completed the full survey (n = 140) were compensated $2.00 for their participation.

Participants across both samples were included in the final analyses if they completed two or more attention check questions correctly (out of three). An independent samples t-test of the total sample revealed that the samples did not differ in terms of attention check accuracy, $p = .33$. Seventy individuals were excluded from the Mechanical Turk sample (final $n = 107$; 40.1% of total final sample) while 75 were

excluded from the general sample (final $n$ = 160; 59.9% of total final sample). An independent samples t-test of individuals who accurately answered at least two attention check questions correctly revealed that these sub-samples did not vary in their accuracy, $p$ = .39.

Participants across the sub-samples were dissimilar in terms of age, gender, education, and race / ethnicity. However, chi-square ($p$ = .53) and logistic regression analyses ($p$ = .99) revealed that participants across both sub-samples decided verdict similarly. Further, participants from the sub-samples were evenly distributed across the Bias ($p$ = .64) and Verdict Procedure manipulations, $p$ = .97. Thus, the samples were collapsed, and all subsequent analyses were performed on one sample.

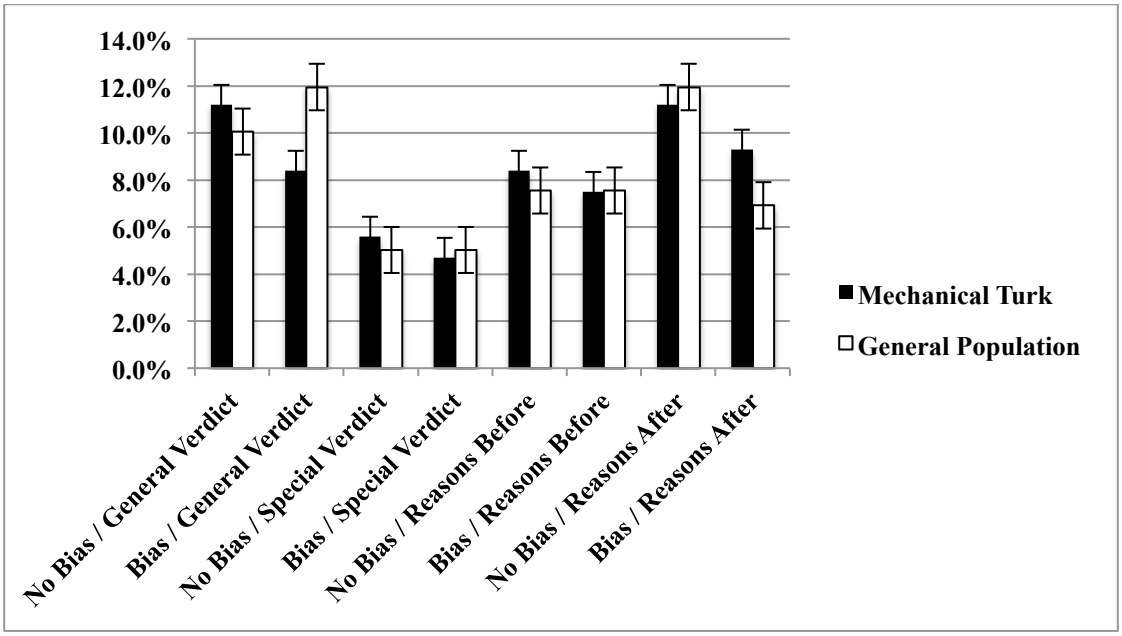



*Figure 1.* Percentage of mock jurors who found for the plaintiff across conditions. Error bars represent standard errors.

Table 1
*Sample characteristics*

| | **Total Sample (*N* = 267)** | | **General Sample (*n* = 107)** | | **MTurk Sample (*n* = 160)** | | |
|---|---|---|---|---|---|---|---|
| | *n* or range | % or mean | *n* or range | % or mean | *n* or range | % or mean | *p* value |
| *Age* | 19-77 | 38.03 | 19-77 | 40.72 | 22-66 | 34.13 | <.001 |
| *Race/Ethnicity:* | | | | | | | |
| African American | 24 | 9.1% | 5 | 3.2% | 19 | 17.8% | |
| Hispanic | 19 | 7.2% | 13 | 8.3% | 6 | 5.6% | |
| Asian | 10 | 3.8% | 2 | 1.3% | 8 | 7.5% | <.001 |
| Native American | 2 | 0.8% | 1 | 0.6% | 1 | 0.9% | |
| Caucasian | 200 | 76% | 130 | 83.3% | 70 | 65.4% | |
| Other | 8 | 3.0% | 5 | 3.2% | 3 | 2.8% | |
| *Sex/Gender Identification:* | | | | | | | |
| Cis-Male | 92 | 35.4% | 34 | 22.2% | 58 | 54.2% | |
| Cis-Female | 147 | 56.5% | 107 | 69.9% | 40 | 37.4% | |
| Trans-Male | 16 | 6.2% | 9 | 5.9% | 7 | 6.5% | <.001 |
| Trans – Female | 1 | 0.4% | 0 | 0.0% | 1 | 0.9% | |
| Non-binary | 1 | 0.4% | 1 | 0.7% | 0 | 0.0% | |
| Other | 3 | 1.2% | 2 | 1.3% | 1 | 0.9% | |
| *Education* | | | | | | | |
| < High School | 1 | 0.4% | 0 | 0.0% | 1 | 0.9% | |
| High School / GED | 20 | 7.6% | 10 | 6.4% | 10 | 9.3% | |
| Some College | 72 | 27.4% | 42 | 26.9% | 30 | 28.0% | <.01 |
| College Graduate | 85 | 32.3% | 39 | 25.0% | 46 | 43.0% | |
| Some Graduate School | 25 | 9.5% | 20 | 12.8% | 5 | 4.7% | |
| Graduate Degree | 60 | 22.8% | 45 | 28.8% | 15 | 14.0% | |
| *Verdict for Plaintiff* | 176 | 66.2% | 105 | 66.0% | 71 | 66.4% | >.05 |

## Design

The currently study employed a 2 (Bias: African American Plaintiff vs. European American Plaintiff) x 4 (Verdict Procedure: General Verdict vs. Special Verdict vs. Reasons Before a General Verdict vs. Reasons After a General Verdict) fully-crossed design.

## Materials

**Evidence presentation.** Participants began by reading a brief case summary. The plaintiff, either Latoya Jackson or Jennifer Becker, depending on condition, sued the defendant, John Morgan, for defamation. The plaintiff, who had been previously employed for almost two years as a maid in the defendant's home, claimed the defendant injured her reputation by falsely accusing her of theft. Mr. and Mrs. Morgan implied that the plaintiff stole an expensive piece of jewelry, at which point the plaintiff left their home. After, the plaintiff claimed she applied for many new jobs, but was unemployable after receiving a negative character reference from Mr. Morgan. Specifically, she claims that Morgan defamed her to a potential employer at a country club, Howard Barlow, who was the general manager of the club. The missing jewelry was ultimately found in the Morgans' home in the library, which Mr. Morgan disclosed to Mr. Barlow. Next, participants read judicial instructions detailing the claims against the defendant, the standard of proof, and possible defenses. As discussed above, the plaintiff's name in all case materials and questionnaires varied according to condition.

**Experimental manipulations.** In the current study, both verdict procedure and bias were manipulated. Verdict procedure varied across condition, and a different

verdict form was used for each of the four possible verdict procedures: General Verdict vs. Special Verdict vs. Reasons Before a General Verdict vs. Reasons After a General Verdict. In the General Verdict conditions, participants were simply asked to find for the Plaintiff or the Defendant.

In the Special Verdict conditions, mock jurors were asked to answer four yes or no questions: *Did the Plaintiff, Latoya Jackson / Jennifer Becker, prove by a preponderance of the evidence that the Defendant, John Morgan, made a defamatory statement against her?*; *Did the Plaintiff, Latoya Jackson / Jennifer Becker, prove by a preponderance of the evidence that the defamatory statement injured her?*; *Did the Plaintiff, Latoya Jackson / Jennifer Becker, prove by a preponderance of the evidence that the Defendant, John Morgan, made the defamatory statement with malice toward the Plaintiff (Latoya Jackson / Jennifer Becker), or with a reckless disregard for her interests?*; and *Did the defendant, John Morgan, prove by a preponderance of the evidence that the defamatory statement was true?*.

In the Reasons Before a General Verdict conditions, mock jurors were first asked to answer two questions: *What legal and factual reasons may justify finding for the Plaintiff, Latoya Jackson, in this case?* and *What legal and factual reasons may justify finding for the Defendant, John Morgan, in this case?* Participants could write as many reasons, and for as long as they wished. Then, on the next page of the survey, mock jurors were asked to find for the Plaintiff or the Defendant. In the Reasons After a General Verdict conditions, participation occurred very similarly, except participants first found for the Plaintiff or Defendant, and then on a subsequent page, were asked to respond to the two above questions in order to give their reasons.

Bias was induced by manipulating the plaintiff's name: In the Bias conditions, the plaintiff had a stereotypically African American name (Latoya Jackson), while in the No Bias conditions, the Plaintiff had a stereotypically European American name (Jennifer Becker). First names were selected from a database of 4,250 first names (Tzioumis, 2018): The database contains information relating to the count and proportion of first names for men and women across six racial groups. To choose a common first name for both African and European Americans, the data was first sorted by percentage of individuals holding these first names within each racial category from most to least, and then compared these names to overall number of occurrences of the name across the general population. Latoya was chosen as 91.18 percent of individuals with that name were African American, and 93 individuals in the data set were named Latoya. Using the same process, Jennifer was chosen. 19,356 women in the database were named Jennifer, and of those, 94.44% were European American.

Next, the name Jackson was chosen to represent the African American plaintiff utilizing a frequency table by Comenetz (2016) based on the 2010 Census Data (U.S. Census Bureau, 2010). Jackson was chosen as it ranked 19 out of all African American surnames, with 708,099 individuals having Jackson as a last name (Comenetz, 2016). Becker was chosen to represent the European American plaintiff as it ranked 315 of surnames, and 96.4% of individuals with this last name were classified as White (Gaddis, 2017, citing U.S. Census Bureau, 2012).

**Measures**

**Affect.** Mock jurors completed an affect questionnaire containing several items from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Participants were asked to indicate how they felt, *right now*, using a scale ranging from 1 (Very slightly to not at all) to 5 (Extremely) for a large variety of emotions (e.g., anger, anxiety, calm, disgust, surprised, upset).

**Attention checks.** Mock jurors were asked three attention check questions: *What crime was the defendant, John Morgan, accused of?, Where was the missing jewelry found?,* and *How long did Latoya Jackson / Jennifer Becker work as a maid for the Morgan family?*.

**Case-related judgments questionnaire.** After rendering a verdict, mock jurors were asked to rate their confidence in their decision from 1 (Not at all confident) to 7 (Very confident). Participants who found for the Plaintiff were then asked to choose an appropriate damage award, to rate their confidence in the assigned award amount from 1 (Not at all confident) to 7 (Very confident), and to indicate how difficult it was to pick an exact award amount from 1 (Not at all difficult) to 7 (Extremely difficult).

Next, mock jurors were asked to indicate their impressions of the Plaintiff using seven-point bipolar scales for characteristics such as Immoral – Moral and Unlikeable – Likeable. Next, mock jurors indicated their impressions of the Plaintiff's case using a seven-point bipolar scale for items such as Unpersuasive – Persuasive and Unbelievable – Believable. Mock jurors were then asked to indicate how bad they perceived the Plaintiff's suffering from 1 (Not at all) to 7 (Extremely) and their overall

impression of the Plaintiff from 1 (Extremely negative) to 7 (Extremely positive). Participants then completed questions pertaining to their impressions of the defendant using the same scale as for the Plaintiff, as well as questions relating to their impressions of the Defendant's case, which were identical to those for the Plaintiff. Mock jurors were then asked to what extent they believed the Defendant's actions caused the Plaintiff's suffering from 1 (Not at all) to 7 (Extremely).

Next, mock jurors were asked to respond to general questions pertaining to their participation, including: *How motivated were you while reading this trial summary?, How motivated were you while determining an award for the Plaintiff, Latoya Jackson's / Jennifer Becker's, suffering?, How much cognitive effort did you expend while reading this trial summary?, How much cognitive effort did you expend while determining an award for the Plaintiff, Latoya Jackson's / Jennifer Becker's, suffering?, How much of a role did punishment of the Defendant, John Morgan, factor into your award decision?,* and *How much of a role did economic losses of the Plaintiff, Latoya Jackson / Jennifer Becker, factor into your award decision?* Only jurors who had found for the Plaintiff answered questions pertaining to an award: For those who found for the Defendant, questions relating to an award were not displayed.

**Cognitive Reflection Test (CRT):** The CRT (Frederick, 2005) assesses individual's ability to curb fast, intuitive, wrong responses to questions, and to instead answer utilizing more deliberative processing to respond correctly.

**Demographic questionnaire.** Mock jurors then answered several demographic questions pertaining to citizenship, age, sex, ethnicity, education, number of STEM classes taken, and political orientation.

**Manipulation check.** Mock jurors were asked: *What is the race/ethnicity of the Plaintiff, Latoya Jackson / Jennifer Becker, who worked as a maid for the Morgan family?*. Options included Black / African American, White / European American, Hispanic, Asian / Pacific Islander, and other (please specify). It was the intention to include the "other" category such that participants could include, when applicable, their perception of the plaintiff's race in cases where they felt her race was not represented by one of the four options (ie: Black / African American, White / European American, Hispanic, Asian / Pacific Islander). However, early in data collection it was discovered that a handful of participants selected "other" and expressed that they did not know or were unsure of the plaintiff's race. The "other" option was then changed to "Other race / ethnicity" and the "please specify" option was removed.

**Procedures**

First, consent was obtained. All materials and measures were administered online utilizing Qualtrics. Survey links were disseminated to the general population sample via email, social media, and Amazon's Mechanical Turk via the TurkPrime platform. Thus, all participation occurred online.

Participants acting as mock jurors began by reading through a brief case summary and judicial instructions. After, participants were asked to respond to three attention check questions, followed by the affect questionnaire. Immediately after, jurors rendered a verdict utilizing one of the four randomly assigned verdict procedures: a general verdict; a special verdict; a verdict procedure requiring that they provide reasons for why they might find for the plaintiff or defendant *before* giving

their verdict; or a verdict procedure requiring that they provide reasons for why they might find for the plaintiff or defendant *after* giving their verdict, and to rate their confidence in their verdict decision. Mock jurors who found for the Plaintiff were asked to award damages and answered several questions pertaining to the damages awarded, including confidence in their award decision, and how difficult it was to pick an exact award.

Next, mock jurors answered questions regarding their overall impressions of the plaintiff and the plaintiff's case, and perceptions of her suffering; overall impressions of the defendant and the defendant's case, and extent they believed the defendant caused the plaintiff suffering; questions regarding how motivated they were while reading the trial and when determining an award (if applicable); how much cognitive effort they expended reading the trial and in determining an award (if applicable); if applicable, how much punishing the defendant played a role in their award, and how much the plaintiff's economic losses factored into their award; the Cognitive Reflection Task; and basic demographic questions. Lastly, participants completed a manipulation check that asked them to select the race/ethnicity of the plaintiff.

## Results

### Factor Scores

Confirmatory factor analyses were utilized for positive and negative affect, perceptions of the defendant and his case, and perceptions of the plaintiff and her case. Principal-axis factor analyses were conducted for each of these categories, and a single

factor was extracted for each category. These standardized scores were then used for subsequent analyses.

Next, using these composite scores, difference scores were created for perceptions of the plaintiff and defendant (perceptions of the plaintiff – perceptions of the defendant) and perceptions of the plaintiff and defendants' cases (perceptions of the plaintiff's case – perceptions of the defendant's case). These difference scores were used in subsequent analyses.

**Verdict and Verdict Confidence**

Across all conditions, 66.2% of participants found for the plaintiff. These rates parallel other similar research (Wiggins & Breckler, 1990). As discussed above, a logistic regression analysis was conducted to test for a three-way interaction between the independent variables (Bias and Verdict Procedure) and Sample. Analyses revealed that the overall model was significant, $\chi^2 = 128.85$, $p < .001$. However, the three-way interaction was not significant, Wald = 3.18, $p = .36$. All subsequent analyses were performed on the total sample.

Next, a logistic regression analysis was performed to investigate whether Bias and/or Verdict Procedure independently predicted verdict, over and above participants' overall impressions of the plaintiff and defendant and positive and negative affect. Analyses revealed that the overall model was significant, $\chi^2 = 125.43$, $p < .001$. Bias did not significantly predict verdict, $b = -.15$, $SE = .39$, Wald = .14, $p = .71$, odds ratio = .87.

Table 2
*Confirmatory Factor Analysis (CFA) loadings and cumulative variance of perceptions of the plaintiff and defendant*

| Item | Loading |
|---|---|
| **Perceptions of the Defendant** | |
| Believable | .835 |
| Blameless | .785 |
| Candid | .823 |
| Honest | .862 |
| Likeable | .810 |
| Moral | .827 |
| Reputable | .788 |
| Right | .785 |
| Overall Impression | .815 |
| *Variance:* 66.4% | |
| **Perceptions of the Defendant's Case** | |
| Believable | .885 |
| Convincing | .947 |
| Persuasive | .863 |
| Serious | .645 |
| Strong | .853 |
| *Variance:* 71.42% | |
| **Perceptions of the Plaintiff** | |
| Believable | .863 |
| Blameless | .813 |
| Candid | .848 |
| Honest | .904 |
| Likeable | .888 |
| Moral | .892 |
| Reputable | .872 |
| Right | .887 |
| Overall Impression | .674 |
| *Variance:* 72.55% | |
| **Perceptions of the Plaintiff's Case** | |
| Believable | .901 |
| Convincing | .941 |
| Persuasive | .852 |
| Serious | .752 |
| Strong | .861 |
| *Variance:* 74.61% | |

Table 3
*Confirmatory Factor Analysis (CFA) loadings and cumulative variance of affect*

| Item | Loading |
|---|---|
| **Negative Affect** | |
| Afraid | .748 |
| Anger | .767 |
| Anxious | .744 |
| Ashamed | .833 |
| Disgusted | .789 |
| Guilty | .794 |
| Hostile | .737 |
| Irritable | .807 |
| Jittery | .770 |
| Sad | .797 |
| Upset | .742 |
| Contemptuous | .631 |
| *Variance:* 58.49% | |
| **Positive Affect** | |
| Attentive | .132 |
| Calm | .353 |
| Enthusiastic | .774 |
| Happy | .719 |
| Inspired | .762 |
| Strong | .728 |
| Surprised | .363 |
| *Variance*: 35.72% | |

However, Verdict Procedure significantly impacted verdict, Wald = 26.62, $p <$ .001. Participants utilizing Special Verdict procedures were significantly less likely to find for the plaintiff compared to participants in all other Verdict Procedure conditions. Participants who rendered a General Verdict ($b = 2.48$, $SE = .56$, Wald = 19.92, $p < .001$, odds ratio = 11.97), provided reasons before a General Verdict ($b = 1.56$, $SE = .53$, Wald = 8.67, $p < .003$, odds ratio = 4.77), or provided reasons after

rendering a General Verdict ($b = 2.42$, $SE = .55$, Wald = 19.08, $p < .001$, odds ratio = 11.24) were significantly more likely to find for the plaintiff compared to those in the special verdict conditions. There was no significant interaction between Bias and Verdict Procedure, Wald = 2.75, $p = .43$. This finding stands in contrast to similar research (Wiggins & Breckler, 1990) who found that jurors were equally likely to find for the plaintiff when rendering either a special or general verdict.

Mock jurors' perceptions of the plaintiff and defendant's cases independently predicted verdict, $b = 1.29$, $SE = .25$, Wald = 27.24, $p < .001$, odds ratio = 3.63. Participants' perceptions of the plaintiff and defendant, positive, and negative affect did not significantly predict verdict, $ps > .19$.

An exploratory model was examined that included the above model and participants' scores on the Cognitive Reflection Test. However, while the overall model significance remained the same ($p < .001$), CRT scores did not significantly predict verdict, $p = .14$.

Contrary to predictions, verdict confidence did not vary by Bias ($F$ (1, 258) = .24, $p = .63$, $\eta p^2 = .001$) or Verdict Procedure ($F$ (3, 258) = 1.27, $p = .29$, $\eta p^2 = .015$), and there was no significant interaction, $F$ (3, 258) = .08, $p = .97$, $\eta p^2 = .001$.

**Damages**

Across all conditions, damages ranged from $0 to $1,000,000, $M = $72,382.43, $SD = $154,598.83. A two-way Analysis of Variance revealed that Bias ($F$ (1, 168) = .001, $p = .98$, $\eta p^2 < .001$) and Verdict Procedure ($F$ (3, 168) = .90, $p = .44$, $\eta p^2 = .016$) did not significantly predict damages, and there was no significant interaction, $F$ (3, 168) = 1.70, $p = .17$, $\eta p^2 = .029$.

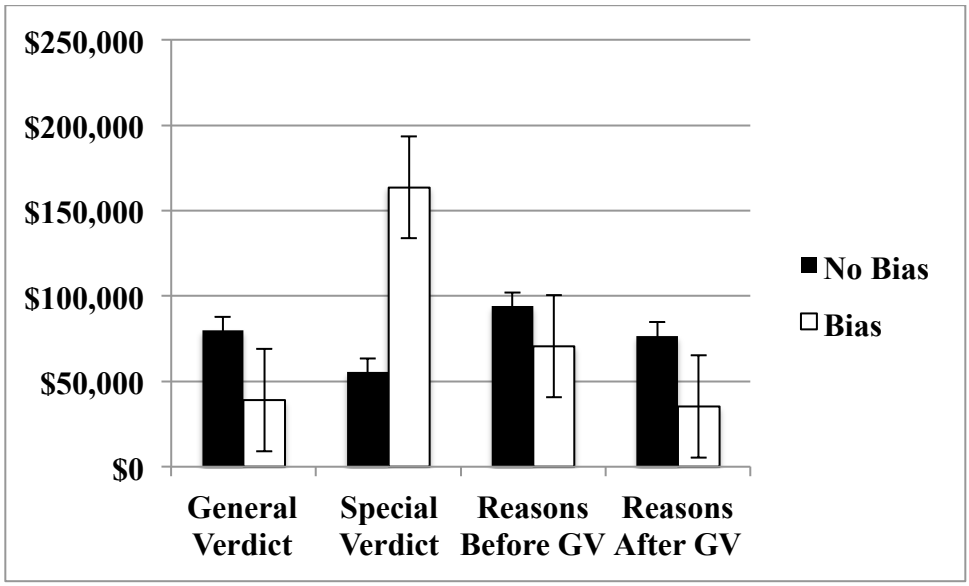



*Figure 2.* Average damages awarded across conditions. Error bars represent standard errors

**Exploratory Analyses**

Exploratory analyses were conducted to investigate the impact of Bias and Verdict Procedure on participants' motivation and cognitive effort expended while reading the case summary. A Multivariate Analysis of Variance revealed no significant differences across groups, *ps* > .39.

Further exploratory analyses were conducted using linguistic analyses software (Linguistic Inquiry and Word Count; Pennebaker, Booth, Boyd, & Francis, 2015) in order to explore mock jurors' written reasons. A 2 (reasons before verdict vs. reasons after verdict) x 2 (bias vs. no bias) x 2 (reasons for plaintiff vs. reasons for defendant) Multivariate Analysis of Variance indicated no effect of the timing of reasons ($F$ (87, 133) = .93, $p$ = .63, $\eta p^2$ = .379) or bias induction, $F$ (87, 133) = 1.00, $p$ = .50, $\eta p^2$ = .40. The reasons provided significantly varied depending on whether they were

provided for the plaintiff or defendant, $F$ (87, 133) = 1.60, $p$ = .007, $\eta p^2$ = .511. No significant differences were found amongst the interactions, $ps$ > .36.

Participants' usage of words in the analytical ($p$ <.001) and power ($p$ = .007) categories were significantly higher in reasons provided for the plaintiff versus the defendant. The analytical category reflects logical and formal thinking, while the power category includes words reflective of dominance, social status, and social hierarchies. Conversely, participants' usage of words in the emotional tone ($p$ = .008) category was significantly higher in reasons provided for the defendant versus the plaintiff. Higher numbers in the emotional tone category indicate more positivity.

Table 4
*Means and Standard Deviations of Mock Juror Language by LIWC Category*

| **LIWC Dictionary Category** | | ***Mean*** | ***SD*** | ***p*** |
|---|---|---|---|---|
| Analytical | Plaintiff | 73.71 | 28.93 | < .001 |
| | Defendant | 52.65 | 38.12 | |
| Emotional Tone | Plaintiff | 18.09 | 22.98 | .008 |
| | Defendant | 27.24 | 29.34 | |
| Power | Plaintiff | 2.61 | 3.68 | .007 |
| | Defendant | 1.46 | 2.58 | |

## Discussion

Given the contemporary movement towards a reasoning requirement for juries abroad, it is important to empirically investigate the relative impact of verdict procedures on jury decision making. The current study is the first to explore the influence of the reasoning requirement on mock jurors decision making in comparison

to general and special verdict procedures. The current study provides some evidence to suggest that a reasoning requirement may not promote stronger decision making than other more common verdict procedures.

While it was hypothesized that participants who rendered either a general or special verdict would decide the case in favor of the plaintiff at similar rates, the special verdict procedure appeared to drastically reduce the likelihood of finding for the plaintiff. In fact, the special verdict procedure was least likely to lead to a verdict in favor of the plaintiff. This finding is important as this procedure is the only of the four within the current study which took away jurors' power to determine the ultimate verdict: When utilizing the special verdict, jurors had no opportunity to make a holistic decision regarding the defendant's liability, as liability was determined by jurors' responses to the four factual questions regarding the case. This finding contrasts other research suggesting that jurors' utilizing general or special verdicts decide cases similarly (Wiggins & Breckler, 1990).

A few case-specific differences exist between the current research and work by Wiggins and Breckler (1990). For instance, mock jurors in the current research heard only one claim of defamation, while those in the research conducted by Wiggins and Breckler (1990) heard two claims. Further, Wiggins and Breckler (1990) argue "special verdicts are more likely to be biased against one of the parties, relative to general verdicts, when the jury does not know the legal consequences of answers to special verdict questions" (p 36). It is possible that jurors in the current study who rendered a special verdict were not aware of the legal implications of their answers to the factual questions: Given that mock jurors were significantly more likely in the

other three conditions to find for the plaintiff, it is surprising that mock jurors who rendered a special verdict were so much more likely to find for the defendant. This makes intuitive sense if in fact mock jurors were unaware of the legal implications of their answers to the fact-based questions: if so, the special verdict procedure may have prevented them from rendering a decision based on their holistic view of the case.

In addition, in Wiggins and Breckler's (1990) study, the addition of a second claim of defamation might have had an additive impact such that mock jurors, aware of the legal implications of the special verdict form, were equally likely to find for the plaintiff as those in the general verdict. Wiggins and Breckler (1990) argue that their case materials may have produced equal bias against the plaintiff as defendant: "the number of special verdict questions could have produced a bias against the plaintiff, whereas the emphasis placed on multiple legal claims may have produced a bias against the defendant" (p 32).

Importantly, mock jurors' decisions were comparable when utilizing general verdicts and when jurors were required to provide reasons before or after rendering a general verdict. In the current study, the reasoning requirement did not appear to change jurors' verdicts. However, contrary to hypotheses, there was no effect of the Bias induction on mock jurors' decisions. If the bias induction had been successful, there may have been significant differences to be seen amongst the verdict procedure conditions. However, it is still important to note that those in the special verdict conditions decided the case significantly differently compared to participants in all other conditions. Further, the case summary presented was rather balanced, and even so, the majority of participants found for the plaintiff, despite weak evidence that the

defendant had prevented her from acquiring employment. This lends some support to suggest that the reasoning requirement may not change juror decision making processes.

In line with predictions and similar research, perceptions of the defendant and plaintiffs' cases also significantly predicted verdict, independent of verdict procedure (Wiggins & Breckler, 1990). This again suggests that jurors decided the case similarly across conditions with the exception of the special verdict conditions. Thus, in the current study verdict procedures did not appear to affect jurors' perceptions of the defendant or plaintiffs' cases. Contrary to predictions and other research, verdict confidence did not vary across conditions (Heurer & Penrod, 1994; Wiggins & Breckler, 1990). Mock jurors were relatively confident regardless of verdict procedure. In addition, mock juror affect did not independently predict verdict. While the current case portrayed a sympathetic plaintiff, the case and claims presented did not seem to elicit strong moral emotions in mock jurors.

Lastly, mock jurors assessed damages similarly across conditions. While there was a wide range of damages awarded ranging from zero to one million, mock jurors generally assessed similar amounts, regardless of plaintiff race or verdict procedure. This finding, although counter to prediction, is supported by other research finding that mock jurors award similar amounts to plaintiff's across special and general verdicts (Wiggins & Breckler, 1990). However, there appears to be a trend towards mock jurors assessing more damages in the special verdict condition, particularly when the plaintiff is African American. However, this finding was not significant, perhaps because the current study was somewhat underpowered, and because so few

mock jurors found for the plaintiff in the special verdict conditions. Further, in the other verdict procedure conditions, mock jurors granted lower awards to African American plaintiffs, although this trend was not significant.

Interestingly, exploratory analyses revealed significant differences in the language uses of jurors when providing reasons in favor of the plaintiff versus the defendant. Although there were no significant differences between the reasoning requirement conditions, these findings provide initial insight into how jurors' language use differs in their reasons provided for the plaintiff and defendant.

**Legal Implications**

The current study is but the first step towards exploring the reasoning requirement debate. While the current study does not suggest an effect of the reasoning requirement on juror decision making, future research must examine the reasoning requirement in other contexts, particularly in cases that might induce more bias. If in fact the reasoning requirement does not promote verdict accuracy, courts must consider the costs of such procedural changes (Burd & Hans, in press).

The current study provides some evidence to suggest that mock jurors distorted incoming information to match their intuitive beliefs about liability in this case. Mock jurors in the special verdict conditions, who could not make an ultimate determination of liability, were significantly more likely to find for the defendant. This finding is supported by other research finding that individuals distort incoming information to conform to an existing preference (e.g., Russo et al., 1996). However, in the other conditions where jurors provided a general verdict (with or without reasons), mock jurors were significantly more likely to find for the plaintiff, despite balanced and

ambiguous case evidence, which stands in contrast to other research (Wiggins & Breckler, 1990). In the current case, mock jurors were likely unaware of the ramifications of answering the four factual questions on the special verdict forms. Thus, because they rendered a special verdict, they were arguably less likely to decide the case holistically (Henderson et al., 1995).

Determining which verdict procedure is "best" is both an empirical and normative issue: While in some cases it might be possible to establish which verdict procedure is strongest in terms of juror decision making (e.g., if empirical research discovered that one procedure was most likely to reduce juror bias), there are several other important values that may be met by a variety of these procedures (Z. Clopton, personal communication, September 29, 2017). For instance, special or reasoned verdicts could help promote transparency in juror decision making, and could help defendants on appeal. Such transparency could also improve the public's perception of jury decision making, which could promote a sense of legitimacy for the institution (Grimmelikhuijsen & Klijn, 2015; Jackson, Trinkner, & Tyler, in press).

However, special verdicts and the sorts of reasoned verdict procedures used abroad suffer from a lack of procedural standardization, which could also reduce trial efficiency. Further, general verdicts allow jurors the most freedom to deliberate, and make jurors less vulnerable to external influence. In the event that future research finds evidence to suggest that reasoned verdicts promote juror decision making, procedures may remain unchanged so as to preserve jury independence (Z. Clopton, personal communication, September 29, 2017), or as a way to preserving another competing value (N. Marder, personal communication, September 26, 2017).

**Limitations and Future Directions**

The current study investigated mock juror, but not jury decision making. It is important to explore the relative impact of the reasoning requirement on mock jurors and jurors who deliberate as a group. Further, the bias induction utilized in the current study was not strong enough to allow for the investigation of whether the reasoning requirement actually can actually reduce bias in jurors, or reduce arbitrary decision making. Further, because the case summary presented to mock jurors was not particularly emotionally charged, this research could not determine whether a reasoning requirement might reduce the impact of juror emotion.

Future research should explore the impact of these varied verdict procedures across a myriad of case types, including mock criminal trials. It is important to assess the likelihood that a reasoning requirement might reduce juror bias; thus, future studies should include a stronger bias induction. In addition, to investigate further the possibility that the reasoning requirement may mitigate the impact of strong moral and/or emotional intuitions, more severe crimes should be presented.

The current research suggests that mock jurors might discuss and reason about plaintiffs and defendants differently. Future research should investigate further how mock jurors' language use might systematically vary in how they think about plaintiffs and defendants. Granholm and Richards (1994) argue that language impacts ideas, which can inform juries' verdicts. Further, custom LIWC dictionaries could be created based on a sub-sample of participants' responses based on a custom coding scheme of common themes; then, participants' responses could be analyzed with the custom

dictionary to explore similarities and dissimilarities across participants' writing responses.

**Conclusion**

A reasoning requirement would certainly make the process of a trial more transparent, generally to the public, and specifically to defendants on appeal. However, the current study provides little evidence to suggest that the reasoning requirement changes mock jurors' decisions, or that it would be more likely to mitigate implicit biases in jurors during these complex decision making processes. Importantly, the lack of standardization in verdict procedures with a reasoning requirement makes it difficult to, 1) assess the implications of these procedures, 2) determine which, if any, might actually promote less arbitrary decision making in jurors. These procedural difficulties might outweigh their potential benefits, and such procedures drastically reduce jury independence. Much research is needed to further parse the impact of a reasoning requirement on juror decision making.

REFERENCES

Abramson, J. Four models of jury democracy. *Chicago-Kent Law Review*, *90*, 861.

Burd, K. A., & Hans, V. P. (in press). Reasoned verdicts: Oversold?, *Cornell International Law Journal.*

Carlson, K. A., & Russo, J. E. (2001). Biased interpretation of evidence by mock jurors. *Journal of Experimental Psychology: Applied*, *7*(2), 91.

Casper, J. D. (1993). Restructuring the traditional civil jury: The effects of changes in composition and procedures. In R. E. Litan (Ed.), *Verdict: Assessing the civil jury system* (414-459). Washington, DC: Brookings Institution.

Chin, A., & Peterson, M. A. (1985). *Deep pockets, empty pockets*: *Who wins in cook county jury trials*. Santa Monica, CA: Rand Corporation.

Clermont, K. M. (2018). Common sense on standards of proof. *Cornell Legal Studies Research Paper, 17,* 1-19.

Cohen, M. (2016). The French case for requiring juries to give reasons: Safeguarding defendants or guarding the judges?. In J. E. Ross & S. C. Thaman (Eds.), *Comparative Criminal Procedure* (422). Northhampton, MA: Edward Elgar Publishing.

Comenetz, J. (2016). Frequently occurring surnames in the 2010 census. https://www2.census.gov/topics/genealogy/2010surnames/surnames.pdf

Csere, M. (2012). Reasoned criminal verdicts in the Netherlands and Spain: Implications for juries in the United States. *Connecticut Public Interest Law Journal, 12*(1), 415-438.

Eisenberg, T., Hannaford-Agor, P. L., Hans, V. P., Waters, N. L., Munsterman, G. T., Schwab, S. J., & Wells, M. T. (2005). Judge-jury agreement in criminal cases: A partial replication of Kalven and Zeisel's 'The American Jury.' *Journal of Empirical Legal Studies*, *2*(1), 171-207.

Ellsworth, P. C. (1989). Are twelve heads better than one?. *Law and Contemporary Problems*, *52*(4), 205-224.

Fed. R. Civ. P. 49

Fed. R. Civ. P. 49(b)(1)

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives, 19*(4), 25-42.

Gaddis, S. M. (2017). How Black are Lakisha and Jamal? Racial perceptions from names used in correspondence audit studies. *Sociological Science, 4*, 469 – 489.

Greene, J., & Haidt, J. (2002). How (and where) does moral judgment work?. *Trends in Cognitive Sciences, 6*(12), 517-523.

Greene, J. D., Sommerville, R. B., Nystrom, L. E., Darley, J. M., & Cohen, J. D. (2001). An fMRI investigation of emotional engagement in moral judgment. *Science*, *293*(5537), 2105-2108.

Grimmelikhuijsen, S., & Klijn, A. (2015). The effects of judicial transparency on public trust: Evidence from a field experiment. *Public Administration*, *93*(4), 995-1011.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, *108*(4), 814.

Haidt, J., Bjorklund, F., & Murphy, S. (2000). Moral dumbfounding: When intuition finds no reason. *Unpublished manuscript, University of Virginia*.

Hannaford, P. L., Dann, B. M., & Munsterman, G. T. (1998). How judges view civil juries. *DePaul Law Review*, *48*, 247.

Hans, V. P., & Jolivet, A. (2016). Iron fist in a velvet glove? Judicial behavior in mixed courts. In T. Eisenberg & G. B. Ramello (Eds.), *Comparative law and economics* (182-205). Northhampton, MA: Edward Elgar Publishing.

Hans, V. P., & Saks, M. J. (in press). Educating judges and juries to evaluate scientific evidence in the courtroom. *Daedalus.*

Hastie, R., Penrod, S., & Pennington, N. (1983). *Inside the jury*. Union, NJ: The Lawbook Exchange, Ltd..

Henderson, J. A., Bertram, F., & Toke, M. J. (1995). Optimal issue separation in modern products liability litigation. *Texas Law Review, 73*, 1653.

Hetey, R. C., & Eberhardt, J. L. (in press). The numbers don't speak for themselves: Racial disparities and the persistence of inequality in the criminal justice system. *Current Directions in Psychological Science*.

Heuer, L., & Penrod, S. (1994). Trial complexity: A field investigation of its meaning and its effects. *Law and Human Behavior*, *18*(1), 29-51.

Jackson, J., Trinkner, R., & Tyler, T. R. (in press). Bounded authority: Expanding "appropriate" police behavior beyond procedural justice. *Law and Human Behavior*.

Jimeno-Bulnes, M. (2007). A different story line for 12 Angry Men: Verdicts reached by majority rule - The Spanish perspective. *Chicago-Kent Law Review*, *82*, 759.

Jimeno-Bulnes, M. (2011). Jury selection and jury trial in Spain: Between theory and practice. *Oñati Socio-Legal Series, 1*(9), 4-26.

Kahan, D. M. (2013). Ideology, motivated reasoning, and cognitive reflection. *Judgment and Decision Making, 8*(4), 407-424.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and Biases: The Psychology of Intuitive Judgment* (81). New York, NY: Cambridge University Press.

Kutateladze, B. L., Andiloro, N. R., Johnson, B. D., & Spohn, C. C. (2014). Cumulative disadvantage: Examining racial and ethnic disparity in prosecution and sentencing. *Criminology*, *52*(3), 514-551.

Lempert, R. O. (2007). The internationalization of lay legal decision-making: Jury resurgence and jury research. *Cornell International Law Journal, 40,* 477.

Lempert, R. O. (2015). The American jury system: A synthetic overview. *Chicago-Kent Law Review*, *90*, 825.

Levett, L. M., & Devine, D. (2017). Integrating individual and group models of juror decision making. In M. B. Lovera (Ed.), *The psychology of juries* (11). Washington, DC : American Psychological Association.

Ley Orgánica de 22 de Mayo art. I (B.O.E. 1995, 122)

Litman, L., Robinson, J., & Abberbock, T. (2016). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavioral Research Methods, 49*(2), 433 – 442.

Liu, Z. (in press). Does reason writing reduce decision bias? Experimental evidence from judges in China. *Journal of Empirical Legal Studies.*

Malsch, M. (2016). *Democracy in the courts: Lay participation in European criminal justice systems*. New York, NY: Routledge.

Marder, N. S., & Hans, V. P. (2015). Introduction to juries and lay participation: American perspectives and global trends. *Chicago-Kent Law Review*, *90*, 789.

Nepveu, K. H. (2003). Beyond “guilty" or “not guilty": Giving special verdicts in criminal jury trials. *Yale Law & Policy Review*, *21*(1), 263-300.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84*, 231-259.

Osman, M. (2004). An evaluation of dual-process theories of reasoning. *Psychonomic Bulletin & Review*, *11*(6), 988-1010.

Paolacci, G., Chandler, J., & Ipeirotis, P. (2010). Running experiments on Amazon Mechanical Turk. *Judgment and Decision Making, 5*(5), 411-419.

Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015). *Linguistic inquiry and word count: LIWC2015.* Austin, TX: Pennebaker Conglomerates.

Pennington, N., & Hastie, R. (1986). Evidence evaluation in complex decision making. *Journal of Personality and Social Psychology*, *51*(2), 242.

Pennington, N., & Hastie, R. (1988). Explanation-based decision making: Effects of memory structure on judgment. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *14*(3), 521.

Pennington, N., & Hastie, R. (1992). Explaining the evidence: Tests of the Story Model for juror decision making. *Journal of Personality and Social Psychology*, *62*(2), 189.

Pennington, N., & Hastie, R. (1993). Reasoning in explanation-based decision making. *Cognition*, *49*(1-2), 123-163.

Russo, J. E., Medvec, V. H., & Meloy, M. G. (1996). The distortion of information during decisions. *Organizational Behavior and Human Decision Processes*, *66*(1), 102-110.

Russo, J. E., Meloy, M. G., & Medvec, V. H. (1998). Predecisional distortion of product information. *Journal of Marketing Research*, *35*(4), 438-452.

Simon, D. (2004). A third view of the black box: Cognitive coherence in legal decision making. *The University of Chicago Law Review*, *71*(2), 511-586.

Simon, D., Stenstrom, D. M., & Read, S. J. (2015). The coherence effect: Blending cold and hot cognitions. *Journal of Personality and Social Psychology*, *109*(3), 369-394.

Sood, A. M. (2015). Cognitive cleansing: Experimental psychology and the exclusionary rule. *The Georgetown Law Journal, 103,* 1543.

Stephens, P. J. (1987). Controlling the civil jury: Towards a functional model of justification. *Kentucky Law Journal*, *76*, 81-164.

Taylor, G. (2011). Jury trial in Austria. *New Criminal Law Review*, *14*(2), 281-325.

Thaman, S. C. (1997). Spain returns to trial by jury. *Hastings International and Comparative Law Review*, *21*, 241.

Thaman, S. C. (2002). *Comparative criminal procedure: A casebook approach*. Durham, NC: Carolina Academic Press.

Thaman, S. C. (2011). Should criminal juries give reasons for their verdicts: The Spanish experience and the implications of the European Court of Human Rights decision in Taxquet v. Belgium. *Chicago-Kent Law Review*, *86*, 613.

Tzioumis, K. (2018). Demographic aspects of first names. *Scientific Data, 5,* 180025.

Vidmar, N., & Hans, V. P. (2007). *American juries: The verdict*. Amherst, NY: Prometheus Books.

Voigt, R., Camp, N. P., Prabhakaran, V., Hamilton, W. L., Hetey, R. C., Griffiths, C. M., ... & Eberhardt, J. L. (2017). Language from police body camera footage shows racial disparities in officer respect. *Proceedings of the National Academy of Sciences*, *114*(25), 6521-6526.

Watson, D., Clark, L. A., & Tellegan, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070.

Wiggins, E. C., & Breckler, S. J. (1990). Special verdicts as guides to jury decision making. *Law & Psychology Review*, *14*(1), 1-41.

# CHAPTER 5

# DISCUSSION

In this thesis, I demonstrated that cognitive processes, memories, and decision making can vary drastically across decision contexts, even for individuals experiencing the same stimuli. The first study provided evidence that group membership, even in extremely minimal contexts, has enduring effects on children's memories for actions committed by in- and out-group members. In the second study, I presented initial findings that suggest purpose in life writing interventions may serve as useful tools in increasing shooting decisions accuracy and reducing shooting decision response times. Lastly, the third study demonstrated that procedural innovations that require jurors provide reasons for their judgments (either before or after rending a verdict) are not likely to impact juror decision making; however, special verdicts, which reduce jurors' power to make an ultimate determination, are likely to impact verdict outcomes. These findings have important implications for the criminal justice system.

Study one demonstrated that children's memories of events are susceptible to biases that may endure over time. In line with other contemporary research, children's memories of events must be examined carefully, and gently, as not to bias (or bias) their perceptions of events. In an inter-group context, these findings suggest that children may not be objective witnesses of events involving in- or out-group members. For instance, in a situation where a child witnessed a crime involving in- and out-

group members, children may improperly recall events in a way that favors in-group members. Thus, special attention should be paid to children's memories of events, particularly those involving children's perceptions of in- and out-group members in ambiguous contexts. Future research should investigate how enduring these effects truly are, and ways of reducing such biases in children's memories.

In my second study, I replicate previous research that finds individuals are faster to make shooting decisions for armed versus unarmed targets. Further, in line with other research, individuals were less accurate when making decisions regarding unarmed compared to armed African American suspects, but were equally accurate in shooting decisions regarding armed and unarmed European American suspects. Importantly, this study is believed to be the first to explore writing interventions aimed at reducing improper shootings, and demonstrated some success for participants asked to write about their purpose in life. Purposeful individuals were equally accurate in their shooting decisions regarding armed and unarmed suspects, and no evidence was found to suggest that the writing intervention negatively impacted decision accuracy overall, as general accuracy was still high for these participants. Further, purposeful participants were significantly faster in their shooting decisions, without sacrificing accuracy. This work provides intriguing preliminary insight into a potential intervention aimed at reducing improper shootings. Future research should explore by what mechanism or mechanisms purpose in life buffers individuals during this trying context.

Finally, study three revealed no evidence to suggest that a reasoning requirement impacts jurors' decisions: Regardless of timing, jurors' decisions were

equal across all verdict procedure contexts when rendering some variation of a general verdict. However, jurors' verdicts were significantly different when rendering a special compared to general verdict. Special verdicts reduce juries' power to make an ultimate determination, but here, led to verdicts more in line with the factual evidence presented in the mock trial. Further, in line with other research, mock jurors' overall impressions of the plaintiff and defendants' cases directly influenced verdict decisions, regardless of what verdict procedure was used. Future research should explore the reasoning requirement in criminal contexts, and for cases involving more emotionally and/or morally charged contexts wherein the reasoning requirement might reduce the impact of extra-legal factors on jury decisions.

Taken together, the above studies suggest several areas ripe for future research with important implications for the criminal justice system. It is imperative to reduce inequalities in the justice system and to generally improve decision making in these complex contexts, particularly during ambiguous circumstances that open the door to personal biases and perceptions. In these high-stakes contexts, lives may hang in the balance.

## Appendix A

## Stories

### Story A

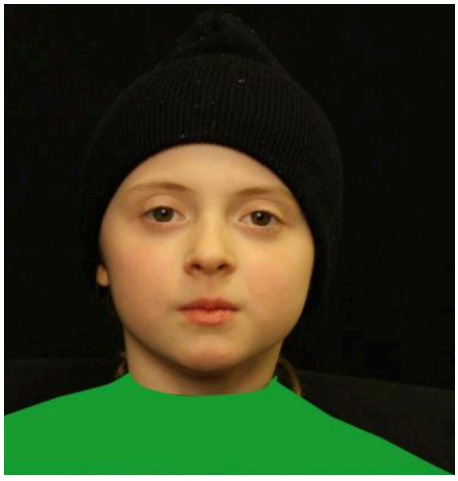
*Sam / Sarah went to recess on the playground after lunch one day. His / her classmate left a toy to go use the bathroom. Sam / Sarah took the toy without the classmate's permission and went to go play with other children. After school that day, Sam / Sarah went over to a friend's house. He / She and his / her friend decided to play a videogame. Sam / Sarah was losing the game and became angry. Sam / Sarah was so upset that he / she broke the videogame system. Later, he / she had to leave his friend's house because of plans he made. He / She was going to the park to meet some friends as he / she does every week. Sam / Sarah knew that these friends would be hungry and would love a snack. He / She decided to make some cookies to bring to his / her friends. When he / she got home that night, his / her parents told him that some family friends were coming over for dinner. Sam's / Sarah's parents were very busy cooking dinner and getting ready. He / She decided to help clean up the house before the friends arrived.*

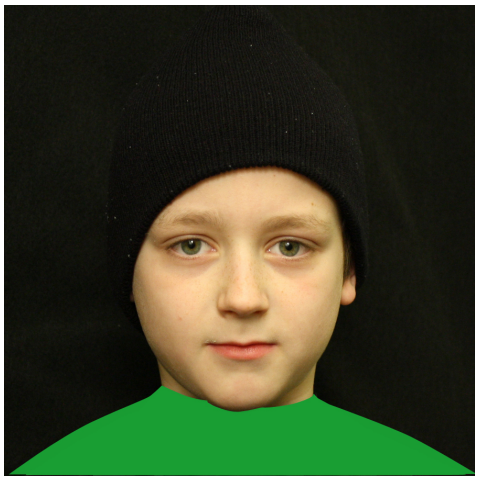
### Story B

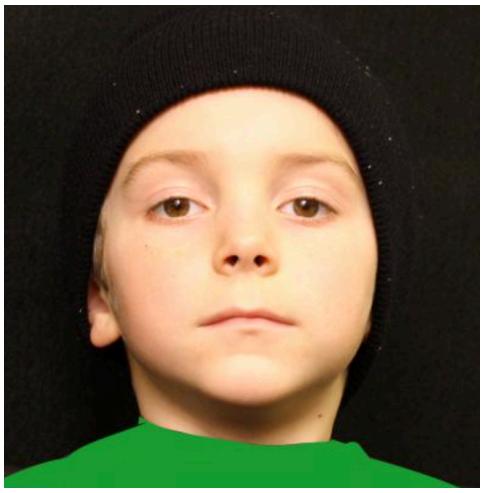
*During school, Max / Mary and his / her friends were lining up for recess. Max / Mary did not like one of his classmates. He / She saw this classmate get in line ahead of him / her. Max / Mary was not happy about this and tripped the classmate as they were walking. After Max / Mary got home, he / she noticed that his / her mom made a chocolate cake. His / Her mother left the cake on the table and told Max/ Mary not to touch it. When his / her mother left the kitchen, Max / Mary decided to take a piece of the cake anyway. Later that day, Max's / Mary's friend came over to play. He / She remembered that he / she got a cool new toy recently. Max's / Mary's friend was very excited about this awesome new toy. He / She decided to share the toy with his / her friend. Later, Max's / Mary's mom told him / her and his / her friend that it was time to do homework. Max / Mary loves math class and always answers the teacher's questions about math problems. His / Her friend was having trouble with his math homework. Max / Mary helped his / her friend to finish all of the math homework.*

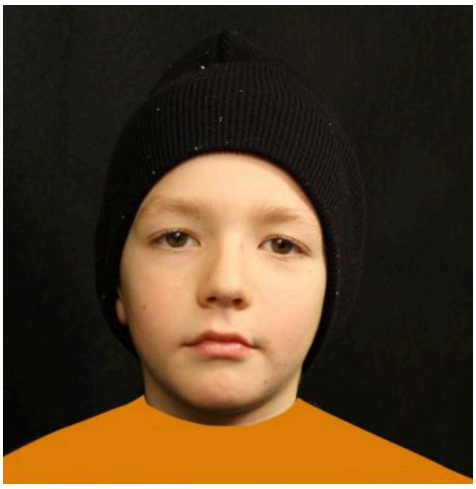
## Appendix B

## MGP Stimuli









## Appendix C

## Sample Verdict Forms

## General Verdict

**Verdict Form**

IN THE CIRCUIT COURT OF DARROW COUNTY,
MARYLAND CIVIL DIVISION

| | |
|---|---|
| JENNIFER BECKER,<br><br>Plaintiff,<br><br>v.<br><br>JOHN J. MORGAN,<br><br>Defendant | JURY VERDICT |

I find for:

| The Plaintiff, Jennifer Becker | The Defendant, John Morgan |
|---|---|
| ○ | ○ |

# Special Verdict

**Special Verdict Form**

IN THE CIRCUIT COURT OF DARROW COUNTY,
MARYLAND CIVIL DIVISION

| | |
|---|---|
| JENNIFER BECKER,<br>Plaintiff,<br><br>v.<br><br>JOHN J. MORGAN,<br>Defendant | JURY VERDICT |

THE FOLLOWING QUESTIONS REFER TO THE CONVERSATION BETWEEN THE DEFENDANT, JOHN MORGAN, AND HOWARD BARLOW, THE GENERAL MANAGER OF THE NITA CITY ATHLETIC CLUB.

Did the Plaintiff, Jennifer Becker, prove by a preponderance of the evidence that the Defendant, John Morgan, made a defamatory statement about her?

- YES
- NO

Did the Plaintiff, Jennifer Becker, prove by a preponderance of the evidence that the defamatory statement injured her?

- YES
- NO

Did the Plaintiff, Jennifer Becker, prove by a preponderance of the evidence that the Defendant, John Morgan, made the defamatory statement with malice toward the Plaintiff (Jennifer Becker), or with a reckless disregard for her interests?

- YES
- NO

Did the Defendant, John Morgan, prove by a preponderance of the evidence that the defamatory statement was true?

- YES
- NO

## Reasons Before General Verdict

Please think carefully about the case and then make a decision. Options for the verdict include finding for the Plaintiff, Latoya Jackson, or finding for the Defendant, John Morgan. You will decide the case on the next page. Before that, please write about the following:

What legal and factual reasons may justify finding for the Plaintiff, Latoya Jackson, in this case?

What legal and factual reasons may justify finding for the Defendant, John Morgan, in this case?

### Verdict Form

IN THE CIRCUIT COURT OF DARROW COUNTY,
MARYLAND CIVIL DIVISION

| | |
|---|---|
| LATOYA JACKSON,<br><br>Plaintiff,<br><br>v.<br><br>JOHN J. MORGAN,<br><br>Defendant | JURY VERDICT |

I find for:

The Plaintiff, Latoya Jackson ○

The Defendant, John Morgan ○

## Reasons After General Verdict

**Verdict Form**

IN THE CIRCUIT COURT OF DARROW COUNTY,
MARYLAND CIVIL DIVISION

| | |
|---|---|
| LATOYA JACKSON,<br><br>Plaintiff,<br><br>v.<br><br>JOHN J. MORGAN,<br><br>Defendant | JURY VERDICT |

I find for:

The Plaintiff, Latoya Jackson ○

The Defendant, John Morgan ○

What legal and factual reasons may have justified finding for the Plaintiff, Latoya Jackson, in this case?

What legal and factual reasons may have justified finding for the Defendant, John Morgan, in this case?